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MATERNITY AND INFANT CARE

IN A RURAL COUNTY IN KANSAS

By

ELIZABETH MOORE

RURAL CHILD WELFARE SERIES No. 1
Bureau Publication No. 26

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PUBLICATIONS OF THE CHILDREN'S BUREAU.

Annual Reports:

Third Annual Report of the Chief, Children's Bureau, to the Secretary of Labor, for the fiscal year ended June 30, 1915. 26 pp. 1915.

Fourth Annual Report of the Chief, Children's Bureau, to the Secretary of Labor, for the fiscal year ended June 30, 1916. 27 pp. 1916.

Care of Children Series:

No. 1. Prenatal Care, by Mrs. Max West. 41 pp. 4th ed. 1915. Bureau publication No. 4.

No. 2. Infant Care, by Mrs. Max West. 87 pp. 1914. Bureau publication No. 8.

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No. 1. Laws Relating to Mothers' Pensions in the United States, Denmark, and New Zealand. 102 pp. 1914. Bureau publication No. 7. (Out of print. Revised edition in preparation.)

No. 2. Mental Defectives in the District of Columbia: A brief description of local conditions and the need for custodial care and training. 39 pp. 1915. Bureau publication No. 13.

No. 3. A Social Study of Mental Defectives in New Castle County, Del., by Emma O. Lundberg. 38 pp. 1917. Bureau publication No. 24.

Infant Mortality Series:

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No. 2. New Zealand Society for the Health of Women and Children: An example of methods of baby-saving work in small towns and rural districts. 18 pp. 1914. Bureau publication No. 6.

No. 3. Infant Mortality: Results of a field study in Johnstown, Pa., based on births in one calendar year, by Emma Duke. 93 pp. and 9 pp. illus. 1915. Bureau publication No. 9.

No. 4. Infant Mortality, Montclair, N. J.: A study of infant mortality in a suburban community. 36 pp. 1915. Bureau publication No. 11.

No. 5. A Tabular Statement of Infant-Welfare Work by Public and Private Agencies in the United States, by Etta R. Goodwin. 114 pp. 1916. Bureau publication No. 16.

No. 6. Infant Mortality: Results of a field study in Manchester, N. H., based on births in one year, by Beatrice Sheets Duncan and Emma Duke. 135 pp., 4 pp. illus., and map of Manchester. 1917. Bureau publication No. 20.

No. 7. Infant Mortality: Results of a field study in Waterbury, Conn., based on births in one year, by Estelle B. Hunter. Bureau publication No. 29. (In press.)

Industrial Series:

No. 1. Child-Labor Legislation in the United States, by Helen L. Sumner and Ella A. Merritt. 1131 pp. 2 charts. 1915. Bureau publication No. 10.

Reprints from the above are also issued, as follows:

Child-Labor Legislation in the United States: Separate No. 1. Analytical tables. 475 pp. 2 charts.

Child-Labor Legislation in the United States: Separates Nos. 2 to 54. Text of laws for each State separately.

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No. 2. Administration of Child-Labor Laws:

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Part 2. Employment-Certificate System, New York, by Helen L. Sumner and Ethel E. Hanks. 164 pp. 3 charts. 1917. Bureau publication No. 17.

No. 3. List of References on Child Labor. 161 pp. 1916. Bureau publication No. 18.

No. 4. Child Labor in Warring Countries: A brief review of foreign reports, by Anna Rochester. 75 pp. 1917. Bureau publication No. 27.

(Continued on third page of cover.)

U. S. DEPARTMENT OF LABOR
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LETTER OF TRANSMITTAL.

U. S. Department of Labor,
Children's Bureau,
Washington, June 25, 1917.

Sir: Herewith I transmit a report entitled "Maternity and Infant Care in a Rural County in Kansas." This report is the first in a series undertaken for the purpose of learning what safeguards are available for the physical welfare of mothers and young babies in typical rural communities. The study was made under the supervision of Dr. Grace L. Meigs, the head of the division of hygiene of the Children's Bureau. This series of field studies is a direct sequence of the statistical report upon Maternal Mortality in the United States, made by Dr. Meigs last year. In that work the grave urgency of this subject is clearly shown. The outline for the inquiry was prepared chiefly by Miss Viola Paradise, research assistant, and the field work was done by Miss Elizabeth Moore and Miss Frances G. Valentine; the text was written by Miss Moore.

Special mention should be made of the assistance of the State board of health, at whose request the study was undertaken; Dr. S. J. Crumbine, secretary of the board, secured the cooperation of physicians, social workers, and officials, and through the press made clear the purpose of the study. Mr. W. J. V. Deacon, the State registrar, prepared all the preliminary data needed as to vital statistics. Dr. Lydia A. Devilbiss, director of the Kansas division of child hygiene, was of much assistance. The study is based upon interviews with individual mothers, and the general approval with which it was received is shown by the fact that not a single interview was refused the bureau's agents.

In the detailed statements given such changes have been made as prevent identification without impairing the accuracy of the illustration.

The bureau is indebted to Dr. J. Whitridge Williams, Johns Hopkins University, for advice with regard to technical matters connected with maternity care and especially for help in drawing up the standards suggested.

Respectfully submitted.

Julia C. Lathrop, *Chief.*

Hon. William B. Wilson,
Secretary of Labor.

MATERNITY AND INFANT CARE IN A RURAL COUNTY IN KANSAS.

INTRODUCTION.

OBJECT OF THE SURVEY.

In 1916 the Children's Bureau began its projected studies of maternal and child welfare in country districts. Three of these investigations were undertaken during the year in selected areas in North Carolina, Wisconsin, and Kansas. In the latter two States the studies were planned and carried out upon the same basis and with the same purpose, and both are confined to a much more limited range of topics than the study in North Carolina.

In Kansas, as in Wisconsin, the investigation is an extension of one phase of the study of the causes of infant mortality which the bureau has been carrying on in cities for the past four years. The one aspect of this wide subject which has been especially emphasized in these rural surveys is the conditions affecting the health of the mother during pregnancy and at the time of childbirth. The points covered are the general living conditions of the family, the work done by the mother, the care she received during pregnancy and at confinement, and the cost of such care. The care and health of the babies during their first year of life also are considered.

This question of the care of the childbearing mother was selected for special attention out of the many problems connected with infant mortality because of its great importance in connection with the loss of infant life through premature birth, injuries at birth, congenital weakness, and associated causes, leading to stillbirths and to deaths in the first weeks of life. Statistics show that this group of causes is responsible for about two-fifths of all infant deaths.[1] To this number should be added the loss from stillbirths[2] and the unmeasured but very great waste of potential life through miscarriages, making altogether a heavy charge against the prenatal and natal causes of death. Obviously any saving at this period can be effected only through the mother, by bringing her and her baby through the period of pregnancy in better health and by giving them

[1] Deaths under 1 year of age in 1915 in the registration area, all causes, 148,561; malformations, premature birth, congenital debility, and injuries at birth, 61,082 or 41.1 per cent of the total. Mortality Statistics, p. 645, Bureau of the Census, 1915.

[2] In the seven cities in which infant mortality studies have been made by the Children's Bureau the stillbirth rate was found to be 3.5 per cent of the total legitimate births.

both better care at the time of birth. In addition to these general considerations, many letters coming to the bureau from country women, as well as many of those written to the Secretary of Agriculture about the needs of farm women, have made it evident that the problem of securing adequate medical and nursing care at confinement is an extremely serious one for country mothers; that for many of them such care is practically inaccessible, either because of actual isolation or because of the expense resulting from distance from physicians and nurses. Consequently it appeared that the bureau would be neglecting its obligations if it delayed further the study of the conditions surrounding maternity in rural districts.

The information on which the Kansas survey is based was secured through interviews with mothers in the selected territory who had had children born within the two years preceding October 1, 1916. The object held in view in the use of this information has been to present a picture of maternity and infant care in the district studied; and no attempt has been made to show the relationship of particular conditions to the infant mortality rate, as has been done in the bureau's city investigations.

FIELD OF THE SURVEY.

The investigation was located in Kansas, partly because that State was considered typical of a large area of plains country west of the Missouri River which had previously been untouched in the bureau's work; and partly on account of the urgent invitation of the Kansas State Board of Health, which believed that a study by the Children's Bureau would stimulate the rural communities of the State to increase their efforts on behalf of mothers and babies. A certain county recommended by the secretary of the State board of health as typical of the western farming country was chosen for investigation. The study was confined to the farming area of this county—the open country—all of which was covered in the inquiry; the one city and all the villages were excluded.

METHOD.

So far as possible a record was made concerning every birth—whether live birth or stillbirth—during the period of two years from October 1, 1914, to September 30, 1916, occuring in families resident in the country districts of the selected county at the time of the birth. As a first step toward securing these records the names of the parents of all babies whose births or deaths were registered were obtained from the State and local registrars' offices. A canvass was made to find additional unregistered births. In all, 353 schedules were secured, representing 331 families; among these were 4 pairs of twins, so that the records cover the history of 349 confinements.

None of the mothers visited refused to give the desired information, and almost always their cooperation was most cordial. A large proportion of the parents had heard about the investigation through newspaper articles or from friends or neighbors and were ready to welcome the agents when they came. In all but 10 cases the main part of the information was given by the mother herself, with supplementary information from the father in many instances. The remaining 10 records were furnished by others—6 by the grandmother, 2 by an aunt, 1 by the baby's married sister, and 1 by the attending midwife, who was also a relative.

Mothers who had had miscarriages but no live-born or stillborn children within the period of the investigation were not interviewed, and no records were secured for such miscarriages except in two instances where the miscarriage resulted in the death of the mother. These two are not included in the figures for the county. Furthermore, no attempt was made to secure records about illegitimate births. A birth certificate was found for only one illegitimate child in the country districts in the two years covered by the survey, and the agents heard of no others in the course of their canvass.

Schedules were not secured for 78 of the registered births in the country districts, for the following reasons: In 60 cases the family had moved out of the county; in 10, the family was not at home at the time of the agent's visit and it was impossible to revisit; in 8, the family could not be located. Among these births there was 1 stillbirth, and 5 of the children are known to have died.

Instead of reproducing here the schedule used the following typical story is given to indicate the kind of information secured in an interview. The names are of course fictitious, and substitutions from other records have been made in order to prevent identification of the family.

Mrs. Green has a baby. Robert, 15 months old, who was born in September. He weighed 9 pounds at birth and has always been well except for two attacks of diarrhea in the summer, when he was 9 months old, and a bad cold now. He is still nursing, but his mother began to give him bread and milk, crackers, and cereals when he was 6 months old.

There are four children living, all in good health. Mrs. Green, who is now 35, was married when she was 22. The next year she had a stillborn baby, a girl. Two years later her oldest boy, now 10 years old, was born; the following year she had a three months' miscarriage. These first three confinements occurred on a farm in eastern Kansas; for the first two Mrs. Green had a midwife, and after the miscarriage her mother took care of her. The last three children—a boy 8 years old, a girl of 4 years, and the baby—were all born on this farm, and Mrs. Green had a doctor each time.

The day after the stillbirth she called a doctor, because the baby was "mortified" and she feared blood poisoning; he performed a curettage, but did nothing for the severe laceration which had occurred. This laceration has given so much trouble since the last baby was born that her present physician advises

an operation. The second pregnancy almost resulted in a miscarriage at three months and the third one did so. Although no serious complications followed, she was weak for a year afterwards. The last three confinements have been normal.

Mrs. Green has suffered from nausea, varicose veins, and swollen hands and feet during every pregnancy, and especially during the last two. During the pregnancy for which the record was secured she had no prenatal care whatever.

When the baby was born Mrs. Green was attended by the doctor from the nearest village, 7 miles away. She was in labor about 18 hours, during which time the doctor made two visits; he also made one postnatal visit. This fee was $18.

Mrs. Green stayed in bed 10 days. One of her neighbors came in every day, washed the baby, and "fixed up the bed"; otherwise her husband took care of mother and baby, and did the necessary housework for two weeks. He also did the washing (with the washing machine) during the winter, both the year before and the year after the baby was born; he is too busy to do much during the summer or fall, but he always carries the wash water from the windmill about 40 feet away, even in the busiest times.

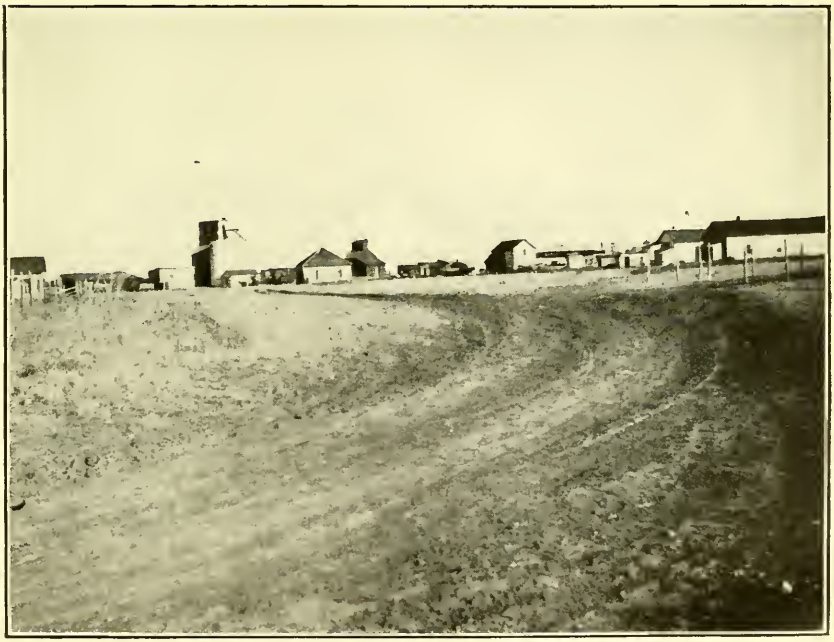
Except for such help as her husband and the boys can give, Mrs. Green does all the housework and the family sewing; she does nothing outside the house except to care for the chickens. She is evidently a good housekeeper, as indicated both by her house and by the children's neatness.

Harvest occurred two and a half months before the baby was born, and Mrs. Green had six extra men to board for two weeks; but she had a hired girl for that time. The thrashing crew came three weeks before the baby was born, just when the oldest boy was having the measles; but Mr. Green arranged so that none of the men boarded at the house. In the summer after the baby's birth she could get no help at harvest. It was then that the baby got diarrhea because she was unable to watch what he ate. That fall Mrs. Green cooked for the four grain haulers for three days. Aside from this she has not had to board any hired men.

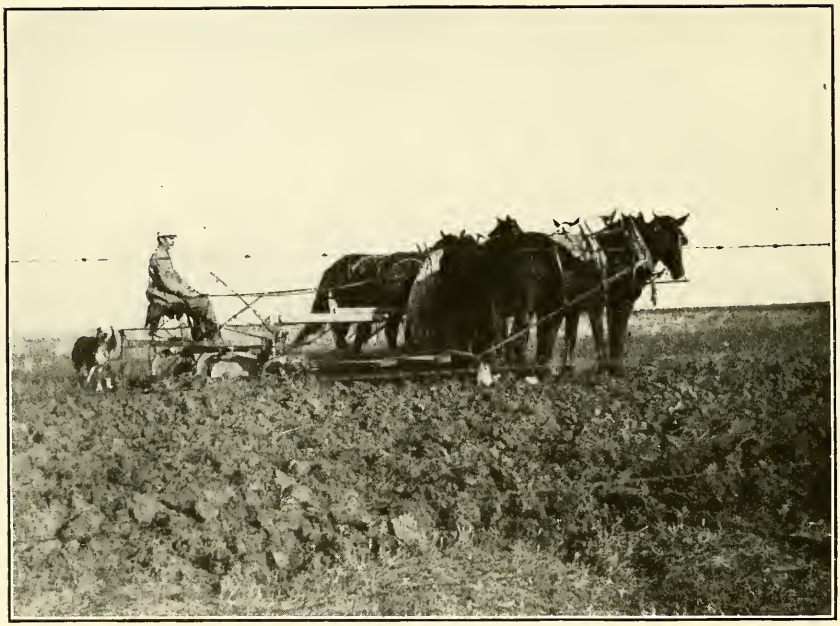
Mrs. Green has always lived in the country. As a girl she helped with the housework from the time she was 10 years old, but "never did a washing till she was 13"; she also helped with the outdoor chores and "drove teams" in the fields from the time she was 8 years old. After she was 14 or 15 she frequently "worked out" among the neighbors for short periods, and the last two years before she was married she did housework in the city. She has never had any serious sickness, except pneumonia at the age of 12; but while she was working in the city she never felt well.

The Greens have lived on this farm 9 years; during this time Mr. Green has paid for one quarter section (160 acres) of good wheat land and has recently purchased a second quarter, which is still heavily mortgaged. He has built a good barn and granary and a comfortable five-room house. Mr. and Mrs. Green were both born in Kansas of native American parents.

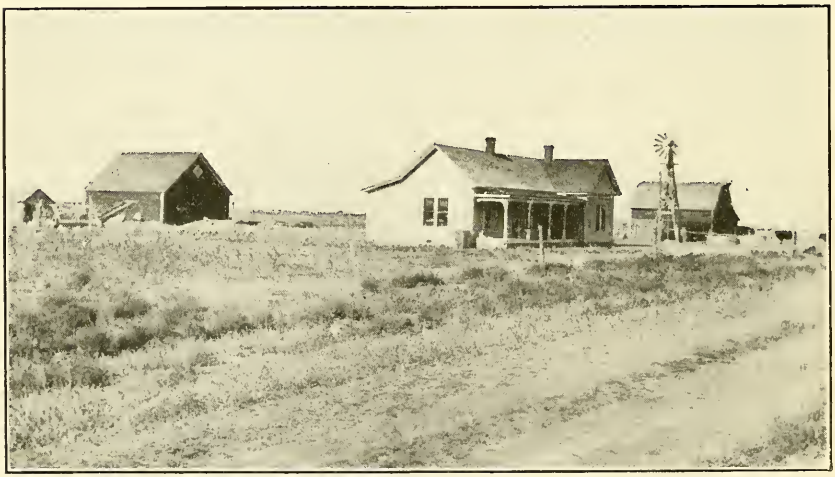
A COUNTRY ROAD ACROSS THE PLAINS.



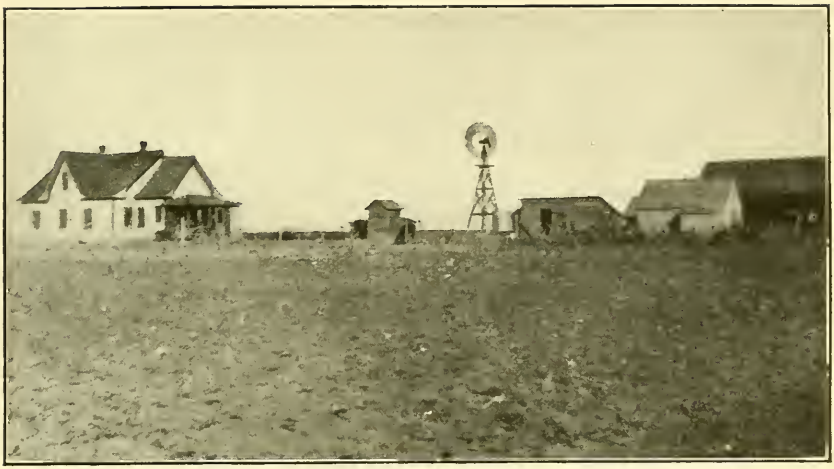
A SMALL VILLAGE IN THE WHEAT COUNTRY.



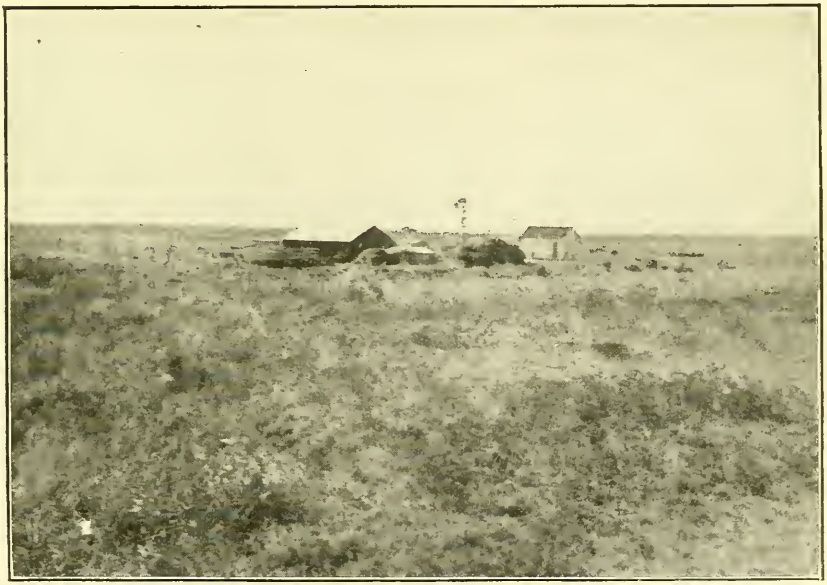
DISKING THE GROUND FOR THE WHEAT.



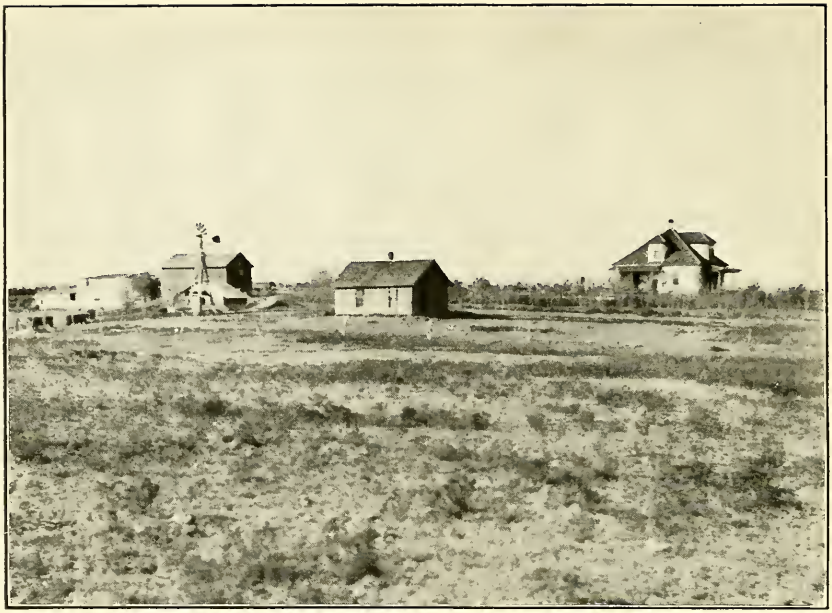
A TYPICAL WESTERN KANSAS FARM HOME.



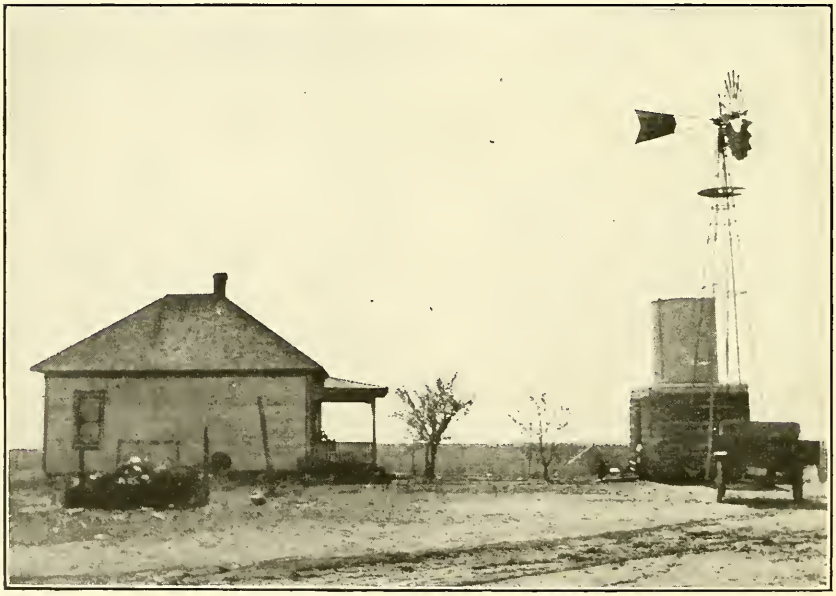
THE HOME OF A PROSPEROUS LANDOWNER.



A RENTER'S HOME, WHERE THE FAMILY LIVES IN THE GRANARY.



OLD AND NEW HOUSES ON A PROSPERING FARM.



A MODEST HOME WITH RUNNING WATER FROM THE WINDMILL TANK.

THE COUNTY.

Before the findings of the survey are discussed a brief description is given of the chief economic and social factors—such as the physical characteristics of the county, character of the population, means of communication, type of farm life, and conditions affecting health—bearing on maternity and infant care in the area studied.

LOCATION AND TOPOGRAPHY.

The county studied is situated near the southern boundary of Kansas, about one-third of the way across the State eastward from the Colorado line. In other words, it belongs in the western half of the State, which has a semiarid climate and a comparatively sparse population. It is one of the larger counties in the State, being 30 by 36 miles in extent. With the exception of the valley of the Arkansas River, which crosses it from west to east, and the valleys of a few minor creeks, the whole county is a high, treeless, rolling plain—part of the Great Plains, which extend across half of Colorado and Kansas as well as adjacent States north and south, sloping gradually eastward from the Rocky Mountains. Very little of this plain is absolutely flat, but the variations are slight except in the neighborhood of the streams, where the ground often drops or "breaks" abruptly. The landscape in most places gives an effect of limitless expanse in which the scattered homesteads, with their struggling hedges, are often hardly noticeable. As one approaches the villages the tops of the grain elevators are visible on the horizon long before there is other sign of habitation.

The general level of the plain drops from between 2,600 and 2,700 feet elevation at the western border of the county to 2,400 feet near the eastern border; about half of the river bottom is below the 2,400-foot level.

SOIL AND CLIMATE.

The soil of this high plain, comprising fully two-thirds of the county, is what is called by the Bureal of Soils[1] Richfield silt loam—a soil "well adapted to the growing of wheat," though "the average yield of wheat when calculated for a series of years is somewhat low, probably not exceeding 10 bushels, and for the average farmer this is barely within the limit of profitable production." The soil is undeniably fertile; it needs no fertilizer and in some places has produced wheat steadily for 30 years with no apparent exhaustion.

[1] Reconnoissance Soil Survey of Western Kansas, p. 58. U. S. Bureau of Soils, Washington, 1912.

The reason why fertile soil, well adapted to wheat, gives such low average yields is largely a matter of rainfall. In this part of Kansas the average annual rainfall is only between 20 and 23 inches,[1] and crop yields are uncertain because of droughts. A good year, one of more than average rainfall, gives fine crops, while an unusually dry year may bring total failure. The selected county is just on the edge of what appears to be the profitable farming belt, at least under present methods of farming; and there is a distinct difference in rainfall and in the resulting prosperity between the eastern and western ends of the county. Moreover, within the same year local showers will sometimes make a considerable difference in crops in neighborhoods not far apart.

The Arkansas River valley, which separates the northern from the southern half of the county, presents very different conditions from the upland plains. The river itself carries little water in the channel; but it has a large subsurface flow which irrigates the adjacent strips of alluvial soil and makes them very valuable, especially for raising alfalfa. This strip of rich land is narrow, not more than a mile or two wide at most. North of this bottom is an irregular strip of rough stony land rising steeply to the bluffs a couple of miles back from the river. South of the river bottom runs a similar strip of sand hills and sandy soil, largely worthless except for pasture.

HISTORY OF SETTLEMENT.

Most of the land in the county, except in the northwestern corner, was taken up in quarter-section tracts by homesteaders about 30 years ago, at the time of the western Kansas boom beginning in 1885. Few of these early settlers are left, however, as nearly all were driven out during the dry years following the boom. It is a common saying that almost every quarter was taken up and relinquished six or seven times before it was finally "proved up." Much land went into the hands of cattle ranchers and speculators after the boom, and only in recent years has been put under cultivation again.

East of the county seat the exodus was not so general as farther west; and in the eastern end of the county there is a large German settlement which dates from the eighties. These families migrated from Ohio to Kansas as a group 30 years ago and have remained largely separate from their neighbors ever since. They intermarry to a considerable extent within "the settlement," and have their own churches. Although in the early days they went through very hard times, they held on to their land; and to-day this neighborhood has the best-developed farms in the county as well as the largest proportion of home owners.

[1] Reconnoissance Soil Survey of Western Kansas, p. 58. U. S. Bureau of Soils, Washington, 1912.

Another and even more distinct community is formed by two small Amish colonies in the southern part of the county. These people are German in origin, a sect of the Mennonite Church; they have a distinctive costume and strict rules as to simplicity of living and hold very little intercourse with outsiders. Within their own group they are closely bound together by relationship as well as by church ties. The Amish families in this county came chiefly from Indiana, most of them less than 10 years ago. They are thrifty, and, in spite of having been poor in the beginning, they have made creditable progress toward farm ownership. A visitor is impressed by the unusual neatness and cleanliness of most of the homes, which go far to compensate for their absolute lack of adornment. German is still the language of family life among these people, though they have been in America for generations. The women are hard workers, following the German custom of helping with the farm work in addition to the housework and care of the children.

PRESENT POPULATION.

Nationality.

As a whole this is a predominantly native American community. Out of the 662 parents in the families visited 505, or 76.3 per cent, were native white of native parentage, while only 19, or 2.9 per cent, were foreign born, 16 of whom were German. Only 4 of the parents could not speak English; these were Russian Germans, 2 of the second generation.

Literacy and intelligence.

The population of the county is also predominantly literate. The 1910 census shows only eight-tenths of 1 per cent of the native white population 10 years of age and over illiterate. Among the farming population there are practically no illiterates; in fact, only one was found among the parents in the families visited. The general level of intelligence—of interest in public affairs, in questions of health, and in the education of the children—also is high. A large proportion of the mothers had read some kind of literature on infant care and were keenly interested in taking their babies to the various "Baby Days" held in the county. The country schools are of the one-room type, but the buildings are well built and well kept; innovations like playground apparatus are not uncommon, and a general interest in school efficiency is manifest. There is a high school in each of the incorporated villages as well as in the county seat, and these high schools are well attended by country children.

Community centers.

The county seat, a city of about 4,100 inhabitants, is the community center for the whole northwestern section of the county. Besides this one city there are three incorporated and three unincorporated vil-

lages. These are all small villages according to urban standards, ranging from 76 to 778 inhabitants. But the two largest are important local business and social centers and boast of "city" water supplies. All of these villages, in fact, except the smallest one, are important to their surrounding communities, providing churches, stores, physicians, and mail and shipping facilities.

Density.

According to the Kansas State census for 1915 this county had 13,152 inhabitants—an increase of 15 per cent since 1910.[1] The six villages, together with the county seat and the State soldiers' home, had a combined population of approximately 6,900,[2] which leaves 6,250 people in the open country—that is, the area covered by the survey—or a rural density of 5.8 persons per square mile. The density of the rural population in the three townships on the eastern border of the county is 7.6 per square mile, while in the four townships on the western border it is only 4 per square mile, illustrating the increasing sparsity of settlement as one goes westward. In the extreme northwestern township, which is the most arid and least thickly settled of all, there were only 2.2 persons per square mile.

MEANS OF COMMUNICATION.

Railroads.

Two transcontinental railroads and two branch lines cross the county, with stations at intervals of not more than 10 miles and one or more grain elevators at every station. Consequently the county is well provided with means of travel; and the shipping facilities would be sufficient if it were not for shortages of railroad cars, which often prevent the farmers from marketing their grain when they wish.

Roads.

The roads in this district, as throughout western Kansas, are usually in excellent condition, thanks rather to the climate and the nature of the soil than to any work put upon them. No attempt is made to surface the country roads in any way (except for a few miles of sandy road along the river which have been covered with cinders), and a heavy rain makes them almost impassable. Such rains, however, are infrequent, and the dirt packs hard and smooth again in a surprisingly short time. Certain of the main roads are designated "county roads" and are kept well graded and dragged; the rest receive practically no attention except that necessary culverts are

[1] The population more than doubled in the preceding decade, 1900–1910. (U. S. Bureau of the Census.) According to the State census the increase between 1915 and 1916 was 4 per cent.

[2] Incorporated places from State census. Unincorporated places from postmasters' estimates. Soldiers' home from commandant's statement.

built and kept up. But in this fortunate country a mere wagon track across the plains soon makes a good road. A large proportion of the country families, especially among the land owners, have automobiles to enable them to take advantage of their good roads.

Telephones.

Telephone facilities extend throughout the county; more than two-thirds of all the families visited had telephones in their homes, only four were farther than a mile and a half away from a telephone, and none had to go more than 3 miles to reach one. This is particularly advantageous in a community where the distances are so great and the homes so widely scattered.

CHARACTER OF FARM LIFE.

Size of farms.

It has been shown already how sparse the population is—hardly one family to the square mile in the western part of the county and less than two in the eastern end. The census of 1910 shows that of the farms in the county three-fourths contained at least 260 acres and nearly one-third were as large as 500 acres. Of the farms visited two-thirds were farms of 320 acres or more; and the consensus of opinion is that 320 acres—a half section—of reasonably good land is the least upon which a farmer can expect to make a comfortable living. All this means that next-door neighbors are often a mile or more apart, and "town" may be anywhere up to 20 miles away. Although houses may be easily distinguished from a distance of 2 or 3 miles, yet from many places out on the plains there is hardly a dwelling in sight in any direction.

Chief crop.

Winter wheat is far and away the main crop of this part of the country. According to the report of the Kansas State Board of Agriculture for 1914 four-fifths of the acreage of planted crops in the county was in wheat; and 85 per cent of the total crop values were due to the wheat crop. Oats and spring crops—corn, kafir corn, etc.—are raised on most farms, mainly for feed; but none of these grains, nor all of them together, approach anywhere near the importance of the wheat. In fact, wheat stands in almost as predominant a relationship to the material well-being of the farmers of this territory as cotton does in the cotton States. In discussing how he is getting along, almost any farmer or his wife will tell of his wheat crop—its acreage, yield, and price—with hardly a thought of anything else.

The life of the typical farm revolves around the wheat crop. Work is active in the fall when the wheat ground is being plowed or disked and the wheat is being sown; after that there is not much to

do, unless an unusual amount of stock is kept on the farm or spring crops are raised, until the following June when the wheat again demands attention. At this time comes the great work crisis of the year—the wheat harvest, employing from 3 to 15 men for two or three weeks—men whom the farmer must usually snatch from the incoming trains and whom the housewife must manage to board. Wheat thrashing usually follows some time in the summer, but lasts only a few days. If spring crops are raised to any great extent, the busy season extends through a much longer period, from spring through corn husking or kafir thrashing, which often comes late in the winter; but there is no such time of concentrated stress as the wheat harvest.

Economic situation.

At the time of the survey wheat crops had been satisfactory for the past few years, and wheat was bringing in the neighborhood of $1.75 a bushel, which was then regarded as a phenomenally high price. Consequently a general atmosphere of good times prevailed in spite of the total failure of the corn crop in the current year. Aside from the car shortage there seem to be no marketing difficulties, as farmers' associations own cooperative grain elevators at nearly every railroad station. Average wheat crops for the current year ran about 13 to 15 bushels, though some farms produced as much as 20 bushels or more to the acre.

Tenantry.

A serious feature of social conditions in this county is the large proportion of farms in the hands of tenants. At the time of the 1910 census this proportion was 34 per cent of the total; among the families visited in the survey it was 38 per cent, not including those who rented land from their parents. In the decade between the 1900 and 1910 censuses the number of tenant farms increased from 73 to 374, while the number in the hands of owners increased from 484 to 722; that is to say, the majority of the newcomers were tenants and the proportion of tenants rose nearly threefold. At present tenantry is distinctly more prevalent in the western or more recently settled half of the county than in the eastern half. This fact seems to indicate—as do many individual histories—a wholesome tendency for the new settlers who start out as tenants to become landowners. Whether this tendency will continue in the face of the rise in land values remains for the future to show. It must be borne in mind in this connection that many of the older settlers homesteaded their land, but that now there is practically no free land left. At present, the customary rental charge of one-third of the grain crop allows an enterprising and capable farmer to "get ahead" and buy land in the course of time. But many of the renters move about from place to

place, forming a transient, unattached, thriftless element in the community, their very names unknown to many of the neighbors. For example, one family moved four times in 13 months, another three times in 7 months. The houses on most rented farms are decidedly inferior to those occupied by landowners; many of them are poorly built and in wretched condition. And it frequently happens that, in addition to the handicap of inadequate farm buildings, renters have insufficient capital to farm profitably, and their whole standard of living is much below the general level.

Many landowners rent land in addition to that which they own, in order to extend the scale of their farming; but they are by no means in the same economic status as the tenants and are not so counted; for they are not transients, and they usually own the homes in which they live. For similar reasons those farmers who operate land belonging to their parents—an appreciable number among the younger folk—do not belong in the tenant class, whether or not they pay rent, for they have a permanent interest in the community and usually have the advantage of farm buildings and dwellings such as an owner ordinarily puts up for himself but not for tenants.

HEALTH.

No investigation of general sanitary conditions was included in this survey. It is worth noting, however, that the general climatic conditions—the elevation and the dry atmosphere—are favorable to good health. So also is the character of the water supply. Practically all the water used throughout the county is taken from drilled wells more than 100 feet deep, which draw from uncontaminated ground-water strata.[1] Open wells, such as are found in many country districts, are very rare. Hence, though the water is hard it is reasonably safe from pollution.

Vital statistics.

The death rate for this county has been for several years somewhat above that for the State. But it should be noted that Kansas as a whole has a remarkably low death rate, about 2 per thousand below that for the rural part of the registration States. Moreover, the rates for the county are stated by the secretary of the State board of health to be increased by the deaths of patients brought from outside the county to the hospitals in the county seat.

[1] Statement of the secretary of the State board of health.

TABLE I.—*Death rate per 1,000 population.*[a]

	1912	1913	1914	1915	1916
Selected county	11.8	12.4	13.5	16.9	13.5
State of Kansas	10.2	10.6	10.5	10.7	11.7
Rural part of registration States [b]	12.4	12.7	12.3	12.3	.....

[a] Derived from Second Biennial Report of the Central Division of Vital Statistics, Kansas State Board of Health, 1914–15; from data furnished by the State board of health; and from Mortality Statistics, Bureau of the Census, 1913, 1914, and 1915.
[b] Includes all places of less than 10,000 population in 1910 in the death-registration area.

According to the State birth-registration figures this county has a birth rate which is not only one of the highest in the State but also is considerably in excess of that for the State as a whole, or for the birth-registration area of the United States which was 24.9 per 1,000 in 1915.[1] As shown in Table II, the rate for the county studied was 29 per 1,000 or higher every year for the past five years. Of the six other Kansas counties which had birth rates higher than 29 more than once in the four years 1912–1915, all but one are immediately adjacent to the one studied, so that evidently a high birth rate is characteristic of this part of the State. In each of the past three years the county seat appears to have a higher birth rate than the rest of the county; possibly this is due, at least in part, to more complete birth registration in the city.

TABLE II.—*Birth rate per 1,000 population.*[a]

	1912	1913	1914	1915	1916
Selected county	35.4	29.0	33.2	29.9	31.0
County seat	.....	.....	37.9	35.8	35.2
Rest of county	.....	.....	31.0	27.2	28.9
State of Kansas	22.5	21.0	21.2	22.2	24.0

[a] Derived from Second Biennial Report of the Central Division of Vital Statistics, Kansas State Board of Health, 1914–15, and from data furnished by the State board of health. Rates for the rural part of the registration area are not available.

In this community a high infant mortality [2] rate does not accompany a high birth rate. In contrast to its general death rate, the county of the survey had in 1914 a lower infant mortality rate than the average for the State, and also in both 1914 and 1915 a rate lower than those found in other States. The rate for the birth-registration area of the United States in 1915 was 100 per 1,000 births; only one State—Minnesota—had a rate lower than 85, while in 6 of the 10 birth-registration States the rate was higher than 100.[3]

[1] Birth Statistics for the Registration Area of the United States, p. 10, U. S. Bureau of the Census, 1915.
[2] Infant mortality rate, as the term is used in vital statistics, means the ratio between the number of deaths under 1 year of age and the number of live births in the same period.
[3] Birth Statistics for the Registration Area of the United States, p. 10, U. S. Bureau of the Census, 1915.

TABLE III.—*Infant mortality rate per 1,000 live births.*[1]

	1914	1915	1916
Selected county	62	71	92
County seat	75	88	113
Rest of county	55	61	79
State of Kansas	77	70	69

[1] Derived from Second Biennial Report of the Central Division of Vital Statistics, Kansas State Board of Health, 1914–15; from data furnished by the State board of health; and from birth and death certificates for the county.

The figures in Table III show that the rate for the county seat was over one-third higher each year than that for the rest of the county; but here again the real facts are obscured to some extent by deaths of children brought from the country to the city hospitals.

It should be noted that the rates for the county and also for both subdivisions were higher in 1915 than in 1914, and much higher in 1916 than in either of the preceding years; also that in this last year this county had a higher infant mortality rate than the State.

Causes of infant deaths.

In the two years 1914 and 1915, 22 of the 53 infant deaths occurring in the county were due to malformations and diseases peculiar to early infancy; outside of the city 13 of the 29 deaths were due to this group of causes, or about the same proportion. In 1916, 14 out of 39 deaths in the county and 7 out of 21 outside of the city belonged in the same group. Taking the three years together, or any one year, malformations and "early infancy" are responsible for a larger number of deaths than any other group of causes; but they are not responsible for the sharp rise in the mortality rate in 1916.

Both in the county as a whole and outside of the city the number of deaths from gastric and intestinal diseases in 1916 alone exceeded the number in the two preceding years. That is to say, in 1914 and 1915 there were 10 deaths from these causes in the county, but in 1916, 12 deaths; and similarly outside of the city, 4 deaths in the two years but 6 in 1916. In July, August, and September of that year there occurred in and around the county seat an outbreak of infantile diarrhea, which loomed large in the minds of parents, doctors, and nurses. In fact, 11 children under 2 years old died from diarrhea in these months; but only 4 of these were under a year old, which number will not account for the high infant mortality rate for the year. On the contrary, the records show that deaths from diarrheal diseases were excessive throughout the year and throughout the county.

Contagious diseases.

During 1916 there were reported to the county health officer 229 cases of measles, 28 of scarlet fever, 24 of chicken pox, 10 of diphtheria, 7 of whooping cough, 1 of infantile paralysis, and 87 of smallpox. Measles seems to be unusually well reported; but the same can hardly be said of whooping cough, for the mothers visited told of fully as much whooping cough as measles in their families. An epidemic of measles which occurred earlier in the year in the city and in the southwestern quarter of the county was responsible for most of the cases of that disease reported.

The cases of smallpox were due to two outbreaks in the spring, in the city and in one of the villages. The latter was widespread, but no deaths resulted.

Compared with the fatalistic attitude common in many localities, the parents in this community seem as a rule to be careful in avoiding exposure of their children even to the milder contagious diseases. At the time of the survey little trouble was experienced from any of the ordinary children's contagious diseases, except for a diphtheria scare in the city from which only five or six cases developed.

Public-health activities.

In Kansas the county is the local unit for rural public-health administration. The county board of health consists of the county commissioners and a county health officer appointed by them. There are no township health officials, consequently the county officer has an extensive field to cover.

At the time of the survey this county was fortunate in having an active, interested health officer—a local physician who had obtained special training for his duties by attending the course for county health officers given by the State board of health. Unfortunately the low salary paid—$250 a year—threatened to deprive the county of his services for the following year.

The health officer's duties embrace the inspection of stores, restaurants, slaughterhouses, etc., the sanitary inspection of schools, and the control of contagious diseases. During his term the officer of this county had twice inspected the stores, restaurants, and slaughterhouses throughout his territory and had visited "about half a dozen" of the 67 schoolhouses of the county. His activities were largely concentrated on the prevention of the spread of contagious diseases. He visited promptly every locality where there was an outbreak and had done much traveling for this purpose. In addition, he took an active part in the "Baby Days" held in the county. Obviously, he had performed far more service than the community was justified in expecting for the salary paid.

The social-service league of the county seat employed a visiting nurse—who was a graduate of the State board of health's training course for public-health nurses—during six months of 1916 and expected to continue this work in 1917. The city and the county each contributed $15 a month toward the nurse's salary; the remainder was raised by private subscription. Her work was confined almost entirely to the city.

The most significant undertaking of the year, from the standpoint of children's health, was the series of "Baby Days" inaugurated by the visiting nurse and carried out by local physicians and dentists in the county seat and three of the villages. Young children were given physical examinations according to a plan recommended by the State board of health, in which the American Medical Association score card was used; but no prizes were given. These examinations aroused a great deal of interest throughout the county; more children were brought to each examination than could be admitted. At the largest meeting 60 children were examined by 4 physicians and 2 dentists.

The spontaneous response to this opportunity, as well as the enthusiasm of the doctors in face of the arduous work involved, indicates a very promising field for public-health work. It seems probable that the project of inducing the county commissioners to employ a public-health nurse for work throughout the county, which is being discussed in the city, would be received with favor by the country constituency.

FINDINGS OF THE SURVEY.

FATHER'S OCCUPATION.

All but 3 of the heads of the 331 families visited were engaged in farming; 317 were farmers, 2 farm managers, 8 farm laborers, and 1 had as his chief means of livelihood the operation of a thrasher. Five of the farmers also worked as farm laborers part of the time; 6 operated thrashers; and 9 had some other supplementary occupation. Of the 3 fathers not engaged in farming, 1 was a storekeeper, 1 a railroad station agent, and 1 a rural mail carrier.

The small number of families found who depended upon farm laborers' wages is a reflection of the extremely seasonal character of farm work in this district. Wages are high during a few months in the busy season, but during the winter a laborer of any kind finds almost nothing to do; hence the bulk of the hired labor is done by a migratory class.

PLACE OF CONFINEMENT.

As has been stated, all the mothers with whom this study is concerned were resident in the country districts of the selected county at the time of confinement. Some of them, however—17 in all—went for their confinement care outside of the area covered in the survey; 3 of these went to relatives outside of the county, 10 went to hospitals in the county seat, and 4 stayed with relatives in the county seat or in one of the villages in the county. Five others went away from their own homes in order to be with relatives but stayed within the country districts of the county.

MATERNITY CARE.

Attendant at birth.

Almost all (95 per cent) of the 332 births in the rural districts were attended by a physician; but in 42 cases the doctor did not arrive until after the birth of the child; and in 10 of these not until an hour or more afterwards. Twelve births were attended by a midwife, 3 by a neighbor, and 3 by the father only; 1 was attended by both a physician and a midwife.

Midwives.

Kansas makes no provision for licensing midwives; the only law in which the existence of such persons is recognized is the birth-registration act. There are no professional midwives in this terri-

tory, for no one could possibly make a living from the few obstetrical cases to which midwives are called. The 12 births mentioned above were attended by 7 different women, who are classed as midwives because they have had experience in this work, take charge of confinement cases on their own responsibility, and are considered by the neighborhood competent so to do. Three of these women had 2 cases each in the 2 years, and 1 had 3 cases; the others had only 1 each in that period. Of the 3 who were interviewed the first had attended 11 cases in 10 years, the second 6 cases in 10 years, the third 15 cases in 7 years. The last—a young native-born woman who had taken a course in midwifery—would gladly have had more practice; the others did the work primarily as a neighborly accommodation, making no regular charge but often receiving presents for their services.

In the 12 families served by midwives, however, they have been an important factor and are evidently preferred to physicians. Out of 76 confinements in the history of these families 53, or more than two-thirds, had been attended by midwives and only 18 by physicians; of the 49 children born to these 12 families in this county 29, more than half, were delivered by midwives and only 13 by physicians.

Obstetrical service by physicians.

The county is well supplied with physicians. Twenty-five doctors attended the births included in this study; 10 of them attended 10 or more cases each, or 273 cases in all. Eighteen of these doctors are located in the county and the others in near-by towns in adjacent counties. The county seat has 8 practicing physicians; each of the villages of 100 population or more has at least 1, while the two largest each have 2.

Probably no home in the county is more than 20 miles from a doctor. All but four of the families visited had a doctor within 15 miles when the baby was born; more than 80 per cent had a doctor within 10 miles and 32 per cent within 5 miles. Even 20 miles is not a prohibitive distance in this country of smooth level roads where, under normal circumstances, the doctor's automobile can cover that distance within an hour of receiving a call. More than one mother remarked, in discussing the subject, that since the coming of the telephone and the automobile distance made no particular difference in getting the doctor. Nearly half (19) of the physicians, it is true, who were late in reaching their obstetrical patients came 10 miles or more; but two-thirds (13) of these were less than an hour late—several only a few minutes. Some chance, such as a flood in the river, a winter storm, the doctor's being "out on a case," a delayed summons, or a brief labor is more likely to be the cause of the doctor's failure to arrive on time than is distance.

That distance is not a serious obstacle to securing medical care in this territory is further indicated by the fact that for 46 confinements some other than the nearest physician was called, from a distance averaging 7 miles greater than that to the nearest doctor. In 17 instances the attendant physician came from 15 miles or more away, though, as has been seen, only 4 families needed to send so far for a doctor.

The fact that a physician can serve a large area makes a choice of doctors possible to most families in the county—a privilege not always available even in much more densely settled districts than western Kansas. This seems to be a factor in the general satisfaction with the medical situation.

The available evidence tends to indicate a comparatively high standard of obstetrical service at the time of confinement. None of the mothers complained of neglect during the period covered by the survey. Instrumental deliveries were rare, only 16 cases out of 349; and the stillbirth rate is low. With one exception all the lacerations which seem to have been severe were repaired.

On the other hand, postnatal supervision of obstetrical patients is much less common than might be expected from the general high level of medical practice. In 136 out of 314 confinements attended by physicians in the open country no return visit was made; in 128 cases one visit; and in only 48 cases more than one visit. In part this failure to make return visits depends on distance from the patient, for the proportion of cases receiving no postnatal visits increases markedly as the distance increases. (See Table IV.) In part, also, it is a matter of the habit of individual physicians; some doctors make return visits to almost all their obstetrical cases, while others revisit almost none.

TABLE IV.—*Number of postnatal visits, by distance from physician.*

Distance from attending physician.	Mothers attended by physicians in country districts, receiving specified number of postnatal visits.					
	Total.	No visits.		One visit.	More than one visit.	Not reported.
		Number.	Per cent.			
Total	314	136	43	128	48	2
Less than 3 miles	31	2	6	15	14	.....
3 to 4 miles	61	14	23	37	10	.....
5 to 9 miles	134	57	43	56	20	1
10 to 14 miles	71	48	68	18	4	1
15 miles or more	17	15	88	2	.....	.....

The most common fee for attendance at childbirth is from $15 to $20, which was the charge in half of the 266 cases for which this

information was secured; in over three-fourths of the cases the physician's charge was from $15 to $25. The fee is seldom less than $15 or as high as $30. Except in complicated cases the number of visits made by the physician does not seem to influence his charge, nor does the distance he travels unless it exceeds 15 miles. (This is true only of obstetrical fees, for the rate for an ordinary visit is usually based on a mileage charge.)

Hospitals.

The county has three hospitals—two of 16 and 25 beds in the county seat, and one of 10 beds in one of the villages. All are physicians' private hospitals. These hospitals reported caring for 60 obstetrical cases in 1916,[1] the great majority in one hospital.

Ten country mothers went to the hospitals for confinement during the two years of the survey. Neither mother nor baby died in any of these cases. Four of these women went to the hospital as the most convenient arrangement. Two were in poor health, one with symptoms of toxemia and the other much weakened by a miscarriage and repeated lacerations. The other four had more serious complications, including one case of convulsions, one Cæsarean operation, one premature birth following a fall, and one case where the doctor expected to use instruments; each of these women was taken to the hospital from a distance of 10 to 16 miles, after labor began. On the whole, therefore, the hospital still seems to be generally regarded as a last resort; the custom of making use of hospital facilities is hardly as well developed as might be expected in view of the community's intelligence upon health matters and the availability of hospitals.

The ordinary hospital charge is $20 a week with physician's fee ($15 for normal labor) in addition, or $25 a week including the doctor's services. This makes the usual expense of a confinement at a hospital amount to between $50 and $60. In this district, therefore, hospital care costs but little more than does care at home if the family pays for nursing instead of relying on unpaid help. For example, one mother paid $50, including doctor's fee, for two weeks at the hospital when her first baby was born; when the second baby came, she stayed at home, paying $18 for one visit from the doctor and $26 for a practical nurse who also did the housework for three weeks. Of course, where there are other children some provision must be made for the housework whether or not the mother goes to a hospital.

[1] The reports cover 12 months for one hospital, 11 months for another, and 5 months for the third, which opened in July, 1916.

Nursing care and household help at confinement.

Trained nurses are not impossible to secure for those who can afford them, since both of the city hospitals give nurses' training courses. Eighteen mothers who did not go to a hospital had a trained nurse, in most instances at the standard rate of $25 a week, or a total expense in different cases of from $25 to $60. As might be expected, the incurring of such an expense is confined to the more prosperous families; 16 out of these 18 families belonged to the land-owning class; and in all of them the father was farming at least a half section (320 acres) of land.

Several of the doctors, when attending confinements, frequently take a trained nurse or a hospital pupil nurse along with them to act as an assistant at the delivery; such a nurse washes the baby and makes the mother comfortable before leaving, but does not stay with the patient. One doctor who had a large practice did this regularly, making no extra charge for the nurse; other physicians usually charged $3 or $5. When, as often happens, the household provides only inexperienced assistance—a daughter or husband or a more or less incompetent hired girl—the services of a nurse even for this short time are of the greatest value both to the doctor and to the mother.

In addition to the mothers who had a trained nurse, 53 others had at least partially trained care by a midwife or a practical nurse (usually called in this neighborhood an "experienced woman"). Such attendants, however, are scarce and often difficult if not impossible to secure. In the great majority of cases the mother had to depend upon an untrained hired girl, a member of the family, a relative, or a neighbor. A very common arrangement is for a neighbor to come in daily to wash the baby, while some member of the household gives all the rest of the nursing care.

The amount of nursing done by the fathers is worth noting. In 16 cases the father took all the care of the mother, though usually—but not always—some one else attended to the baby. One father said: "I have waited on my wife both times according to the doctor's directions, thereby saving the price of a nurse"; this same father did the housework for two or three weeks after the first baby came; but the second time the family had a hired girl. In two large families visited the father had delivered most of the children, and in another family the mother insisted upon his officiating at the last two births, because it worried her to have an outsider around. In 19 cases the father did all the housework while the mother was sick.

As has been said, the absence of a competent "experienced" nurse is often due not to considerations of expense so much as to difficulty in getting anyone to help. For instance, in one prosperous family the mother said that, as she could get no one to come in, she took care of

the baby herself from the day after it was born, while her oldest girl (15 years old) waited on her and brought her what she wanted. Another mother's account was that her daughter of 15 did all the housework and that she took care of herself and the baby; the daughter brought things to the bed for her to wash and dress the baby with, and under her direction did whatever she could not do herself. In another instance a neighbor came in the day the baby was born and once afterwards to "fix things up"; after the third day the mother got up and attended to the baby and even made the bed herself.

About half of the mothers visited had hired household help at the time of childbirth; nearly one-fifth had help during the latter part of pregnancy. Such help is rather more common on the larger farms (320 acres or more) than on the smaller ones, but usually absence of hired help is not to be attributed to poverty. Sometimes, it is true, the help which relatives can give seems sufficient; but more often the family would have had a hired girl if a good one could have been found. As in all country districts, household help is scarce; but the dearth does not seem to be as absolute as it is in many places, partly perhaps because the farmers are able and willing to pay fairly good prices for such help at times of stress.

So few women except trained nurses were employed to do nursing exclusively that they hardly count in an estimate of the nursing expenses of childbearing. Most of the "experienced women" and nearly all the hired girls who did childbed nursing did the housework also. The usual wage for a woman taking charge of the household at such a time and doing more or less nursing was $1 or $1.50 a day; a girl doing ordinary housework without taking much responsibility was commonly paid $4 or $5 a week.

Considering only those (332) confinements which took place in the country we find that in 142 cases the mother had no expense for either nursing or household help at that time; that is, all such work was done by members of the family, relatives, or neighbors. In the other 190 cases some expense was incurred for these services, either for nursing or housework, or both. In more than half of these cases where the cost was obtained this item in the budget was less than $20; in nearly two-thirds it was less than $25; in only one-eighth was it greater than $50. The amount spent depends mainly upon the length of time for which help is kept; the figures given above cover a maximum period of 12 weeks—6 weeks before and 6 weeks after confinement; but the minimum was sometimes as short as 3 days. As a matter of fact, 19 mothers had help for more than 6 weeks before confinement and 18 for more than 6 weeks afterwards; but the expense for these additional weeks has not been included in considering the costs of childbirth.

Prenatal care.

In one-third (119) of the pregnancies which occurred in the two years of the survey the mother had *some* prenatal care from her physician. How adequate this supervision was, however, is a different question.

In order to be able to classify the care received by mothers during pregnancy the following outline has been drawn up, after consultation with Dr. J. Whitridge Williams, professor of obstetrics, Johns Hopkins University, as representing a fair standard for *adequate* medical prenatal care:

1. A general physical examination, including an examination of heart, lungs, and abdomen.
2. Measurement of the pelvis in a first pregnancy to determine whether there is any deformity which is likely to interfere with birth.
3. Continued supervision by the physician, at least through the last five months of pregnancy.
4. Monthly examinations of the urine, at least during the last five months.[1]

Though this standard is no higher than is necessary to insure the early detection of abnormal symptoms and conditions, it is not a standard which is generally attained in private or public practice, either in cities or in rural districts.

Comparing conditions as reported by the mothers with this standard, we find that six of the patients who are counted as having prenatal care because they sent the urine to the doctor for examination never saw the doctor at all during pregnancy, though in some instances he sent them medicine. Sixty-nine patients who saw the doctor had no general examination. Fifty-nine had no analysis of the urine. In no case was the pelvis measured with the calipers, in spite of the fact that 42 of these patients were carrying their first babies. About two-fifths of the patients saw the doctor only once; in 28 of these cases the one consultation with the doctor, with no general examination, was all the prenatal care given.

In only two cases, neither of them a first pregnancy, could the care received be counted as adequate; in four other cases it would have been adequate, since there was continued supervision and repeated urinalyses, except for the fact that the patients were primiparae and no measurements of the pelvis were made. In 18 cases, none of which was a first pregnancy, there was a physical examination, one or more urinalyses, and some supervision, though not enough to make the care adequate; these are classed as having fair care. All the rest (99) of the women either were primiparae and had no measurements taken, or else they lacked one of the other essentials. For example,

[1] See Maternal Mortality, pp. 12–13. U. S. Children's Bureau publication No. 19.

a women in her first pregnancy, in poor health and under the doctor's care all the time, had no general examination and no urinalysis. Another mother, who sent the urine for examination daily during the last two months of her first pregnancy, never saw the doctor until the time of confinement. Another mother, who was bloated, vomited, and had dizzy spells all through her first pregnancy, went to the doctor in the second month. He made no examination nor analysis of the urine, though he told her she had kidney trouble; he merely gave her some medicine "which did no good," so she never went back. At eight months she had eclampsia.

As a rule the mothers who feel themselves to be in poor health during pregnancy are the ones who resort to the doctor. Among the 119 who had prenatal care, only 22 reported that they felt well during pregnancy; 34 had minor ailments such as backache, nausea, cramps, headaches, swollen hands and feet, or varicose veins; and the rest had some more serious trouble. Few women in this community recognize that it is wise to consult a physician during pregnancy whether or not they feel normally well. On the other hand the fatalistic assumption that a pregnant woman may expect to be thoroughly miserable is much less common than in many other places. Most of these women, if they feel sick, make some attempt to get relief from the doctor even if only by sending for medicine. Doctoring with patent medicines is occasionally tried but is not common.

The cost of prenatal care in this community is difficult to determine, because it is frequently either included with the doctor's obstetrical fee or lost track of in the general family bill. In the majority of cases where a report could be obtained the cost was less than $5. Apparently no charge is ordinarily made for urinalysis; most consultations with the doctor take place at his office, for which the fee is never high; and only when some serious complication calls the doctor to the home is any considerable expense involved. That cost is seldom a determining factor in calling upon the doctor is further indicated by the fact that in this district prenatal care is no more common among the well to do than among the poorer families.

Cost of childbearing.

An attempt was made to find out how much it costs to have a a baby in this part of the country. This estimate of costs covers only the services connected with the birth—prenatal care, obstetrical fee, nursing, and extra household help for the confinement period—and does not include equipment of any kind, such as medicine, nursing supplies, or the baby's clothes.

The ordinary range of the different items of cost thus included has been already described. The total cost for these services was obtained for 249 cases[1] (the other mothers being unable to give this information), and was as follows:

Cost of confinement.	Number of confinements.
Total	249
Less than $50	198
Less than $25	114
No cost	4
Less than $5	1
$5 to $9	6
$10 to $14	13
$15 to $19	53
$20 to $24	37
$25 to $29	28
$30 to $39	39
$40 to $49	17
$50 to $59	18
$60 to $69	11
$70 to $79	7
$80 to $89	5
$90 to $99	4
$100 or more	6

From these figures it appears that nearly half (46 per cent) of the babies cost their parents less than $25; that four-fifths (80 per cent) cost less than $50; and that the expenses of the birth of the large majority (63 per cent) came to between $15 and $40.

Of the 22 cases where the costs were markedly higher than the general rule—that is, $70 or more—2 were hospital cases with serious complications; in 4 cases the cost for physician's services outside of the hospital exceeded $25; in 7 cases a trained nurse was employed; and in 9 cases the expenditure for household help and nursing (exclusive of trained nurses) was $50 or more. Apparently, therefore, unusually high expenses of childbirth are much more apt to be due to the cost of nursing and household service than to medical fees.

COMPLICATIONS OF CONFINEMENT.

Among the 349 confinements concerning which records were secured in this study there developed 2 cases of eclampsia. Four of the children were stillborn. Sixteen deliveries were effected with instruments. One Cæsarean section and 2 versions were performed. In the rural parts of the county during the period studied 3 deaths occurred from puerperal septicemia, 2 following miscarriages, and 1 following a full-term birth. So far as could be learned, these were the only deaths in this area from causes connected with childbirth.

During their whole child-bearing history the 330[2] mothers had had 1,269 pregnancies, of which 63 (5 per cent) resulted in mis-

[1] Including confinements in a hospital, but excluding others where the mother went away from the country district of this county.

[2] The history for one mother, secured from the grandmother, was too incomplete to use.

carriages and 23 (1.8 per cent) in stillbirths. Of the 1,216 children carried to at least seven months' term 73 were delivered with instruments; 48 of these were first-born children. That is, 14.5 per cent of the first-born children of these mothers and only 2.8 per cent of the subsequent children were delivered with instruments. There was only one fully developed case of eclampsia besides the two in the survey period, but in one other instance the doctor forced an eight-months' birth "because he feared spasms."

MOTHER'S WORK.

The work which a mother does during pregnancy and within the first months after childbirth is a possible direct cause of injury to her and to her baby. So, also, her ordinary duties and the work which she did in girlhood have an important influence upon her health, and presumably therefore affect her children's vitality.

As would be expected in a farming community, the mothers of this study did practically no work away from home; two laborers' wives hired out for a few weeks to cook for harvest hands or thrashers, but that was all. Consequently the problem of the work the mothers did during the period of the survey resolves itself into a question of housework and work on the home farm. Of these, housework is much the more important in this district.

Cessation of work before childbirth.

It already has been shown that about 1 in 5 of the country mothers had hired help with her housework during the last weeks of pregnancy. Often such help is primarily a precaution to insure having some one on hand when needed, but in some cases the hired girl relieves the mother of most of her work. Generally, however, pregnant mothers keep up their usual round of duties until labor begins, unless they are disabled by serious ill health.

Resumption of work after childbirth.

In this community two weeks is well established as the shortest period that should elapse after confinement before a woman undertakes any great amount of work; and often the heavier housework such as washing and ironing, and the out-of-door chores, are not resumed for two or three months. Ten days in bed is the prevailing standard for recuperation after childbirth, but normally a mother who gets up after 10 days does no work within the fortnight.

Less than 1 in 10 of the mothers visited got up from bed before the tenth day; less than 1 in 40 under a week. Pressure of work does not often seem to be an important factor in inducing the women of this part of the country to get up too soon, for out of 7 who were up in less than a week, 3 did no work for two or three weeks; 3 did

some work after one week but had help for two or three weeks; only 1 did any of her regular work within the first week, and she did nothing but the cooking during the first two weeks.

Usual housework and help.

Leaving out of account the period immediately preceding and following confinement, we find that only 16 mothers—1 in 20—had a hired girl as a regular or usual assistant; 73 had a sister, mother, or daughter 14 years or older to help them; and 33 reported that they had more or less help from their husbands. The rest—about two-thirds of the whole number—managed their housework alone or with some help from the boys or younger girls. The amount of work the mother has to do depends also to a great extent upon the size of the family. Moderately large families—of seven or eight people—are numerous, forming almost as large a proportion (28 per cent) of the total as do the small families of three or four (30 per cent). The typical family has several children who are too small to be of any help to the mother but are, on the contrary, a decided addition to her burdens.

The farmhouse.

The typical farmhouse[1] has from three to six rooms, most commonly four, all on one floor. Most of the houses, except on some of the tenant farms, are fairly well built and in good repair; but many are needlessly inconvenient for the housewife. As one renter's wife said when asked about conveniences, "I mostly had *in*conveniences." Occasionally one comes upon a farmer who has just taken hold of his own land, and is temporarily housing his family in a one or two room shack; but such pioneer conditions are rare. Probably the most serious housing problem is the difficulty some renters have in finding any house to live in or, at least, any decent accommodations.

Room crowding is fairly common in these farm homes, and the inevitable confusion must add appreciably to the housewife's labors. Nearly half (45 per cent) of all the homes had more than one occupant per room, counting all the rooms in the house and not including the baby; one-sixth (16 per cent) had two or more occupants per room, which makes a distinctly overcrowded household. As might be anticipated, the homes on the smaller farms (under 320 acres) are more often crowded than on the larger ones.

Water supply.

Almost every farm is provided with a windmill; in spite of the fact that a drilled well with its mill is an expensive piece of equipment, it is fortunately accepted as essential. And as the western plains are

[1] All house information is for the house where the parents were living when the baby was born.

notoriously windy, the water seldom has to be pumped by hand; except that, as one farmer explained, "The wind 'most always gives out at harvest, just when you need the water most." In the majority of cases the windmill is located within 50 feet of the house; nearly one-fourth of the houses have their mills within 25 feet. On the other hand, 1 in 8 of the homes without water inside is 100 feet or more away from its water supply. For the most part, however, the carrying of water is not such a task as in districts where it must be brought from a spring or creek.

As the pumping power is already provided, it is comparatively easy to pipe water into the house; in a typical instance, where running water had recently been put in, the installation cost only $100. Nevertheless only 60 families, or less than 1 in 5, had water in the house when the last baby was born. But the idea of installing "waterworks" is evidently spreading, for several families had made this improvement within the year; and more were planning to do so in the near future, especially when building new houses. One mother expressed a common sentiment when she said, "We sure will have water when we are settled on a place to stay."

When people have water in the house they usually have running water from a tank filled by the windmill. This tank is sometimes in the house and sometimes on the windmill frame. But some builders have been so misguided as to arrange the tank *under* the house so that the water must be lifted into the kitchen by a hand pump. A number of families have piped water available in the summer, but the tanks or pipes are not protected from freezing in the winter.

One in four of the landowning fathers had water in his house, but only 1 in 10 of the renters.

Other conveniences.

Sinks for the disposal of waste water are as scarce as inside water, and even more markedly confined to the homes of landowners. Eighteen families had bath tubs—most, but not all, with running water; only 2 had water-closets.

Although conveniences which are taken as a matter of course in the ordinary city home—sinks, running water, set tubs, and lights—are scarce, the housewives are well supplied with other labor-saving devices such as oil stoves, sewing machines, washers, and mechanical churns. Nearly every one has a sewing machine. Four in every 5 women have washing machines, and 1 in every 8 has a washing machine run by an engine.

Boarding hired men.

By far the most serious aspect of the housework problem in this community is the necessity of boarding hired men. About one-third

(114) of the families visited kept a regular hired man for whom the housewife must provide for at least six months through the summer and fall. During their last pregnancy 263 mothers had occasional farm laborers to board. These extra hands appear for the busy seasons, almost always for harvest and thrashing, often also for plowing and sowing in the fall, and sometimes for the spring work.

One mitigating feature of the situation is that it is not the custom in this district for the housewife to do the washing for the hired men, particularly not for men who are employed for only a short time. Even men employed for the season are usually expected to do their own laundry work.

Harvest and thrashing crews.

Of all the "hands" the harvest crew is the greatest burden. Wheat harvest comes in the latter part of June and the early part of July and ordinarily lasts for from two to three weeks, occasionally for a month; and life is strenuous during that time. The smallest number of men who can handle the reaping is 3—called a half crew—which means 2 men besides the head of the family, unless there are grown sons or brothers in the household. A standard crew for work with a header—the almost universally used type of reaping machine—is 6 or 7 men, and this is the number most commonly employed; but the larger farms not infrequently need a double crew of 12 to 15 men. To have such a crew to cook for, even with the help of a hired girl, for about three weeks in the middle of summer is plainly no light task and is especially trying when it comes near the time of confinement. The women recount that during harvest they have to begin work about 4 a. m. and get through about 10 p. m., with possibly a short rest after dinner. The work is acknowledged to be so hard that hired girls regularly get more than their standard wages at this time—sometimes as much as $2 a day.

The housework at thrashing time is not regarded as so arduous, even when a larger number of men (thrashing crews usually number 12 to 15 men) has to be provided for, because thrashing ordinarily lasts only a few days, and "you can get a lot of things cooked up in advance to last that long." Furthermore, many of the thrashing outfits feed their own men—the "machine men"—from a portable kitchen called the "cook shack," an arrangement which relieves the housewife of all responsibility so far as these men are concerned. Then all she has to provide for, in addition to her family, are the few men who haul the grain; and when, as is often the case, the haulers are neighbors who are "changing work," she has to give them only their dinners. Obviously the cook shack is a great boon to the housewife. The reason it is not always employed is that

under the standard scale of charges it constitutes a large addition to the farmer's thrashing expense; he can save a good deal of money by getting an outfit without a cook shack and providing for the men himself.

How the situation works out for a representative group of farm mothers is shown in the following illustrations:

On a farm of 160 acres, where the family consisted of the father, mother, and two children of 3 and 5 years, the baby was born in June, at the beginning of the harvest season. For a week before her confinement the mother had to house and board 4 men; and when the actual harvesting began, 10 days after the baby was born, she had 6 men to board for 8 days. Six weeks later came the thrashing, with 5 men for 3 days. This extra burden of work came at a time when the mother most needed her strength, at the end of a trying pregnancy which was complicated by swollen feet, varicose veins, and dizzy spells. While the confinement was normal, the recovery was slow. Although for 2 weeks before and 3 weeks after the baby was born she had a hired girl who did most of the work, and although her sister came to help during thrashing, nevertheless the mother attributes her slow recovery to the fact that she had to work "harder than she would have liked" after the baby was born.

The mother on another 160-acre farm had 4 children, the eldest 8 years old. She was miserable with pain and nausea all through the latter months of her fifth pregnancy, and was weak for more than a month afterwards. Harvest began the day before the baby was born. The two "hands" stayed 15 days; but they got part of their meals at a neighbor's, and the mother did not have to cook for them herself because she had a hired girl who did all the work for 2 weeks before and 5 weeks after the baby came. At thrashing time the mother had only two meals to give.

In another case, on a farm of 640 acres, the mother, who was badly bloated and troubled with headaches and vertigo during the last month of pregnancy, had to board during that month 3 carpenters and 6 men for the barley harvest, in addition to the 1 man employed for the season. Though she had a hired girl for the last 2 or 3 weeks, she helped with the cooking up to the last day and had the care of her three small children. The baby was born the very day the wheat harvest began; that day there were 15 hired men on the place. Harvest lasted 12 days; the next day the hired girl left; and the day after that came the thrashing, with 6 men to provide for. It is not surprising that the mother reported that she recovered her strength slowly.

The baby on a 450-acre farm—the youngest of 5 children under 9—was born in the winter. The mother had had a stillborn child less than a year before, and she vomited badly all through this last pregnancy. Every year she has 6 men for harvest in July for about 3 weeks, and 6 grain haulers in October for about 8 days; her husband keeps 1 hired man all the time and usually 2 all summer. The mother has had no help for the past three seasons.

The family on a 520-acre farm consisted of 9 people; 2 boys were grown, but the oldest girl was only 12, and there were 3 children under 5. The last baby was born in the fall, 3 months after harvest; the mother was troubled during pregnancy with pains and dizziness. Harvest brought 2 hired men for 10 days early in July; later in the month thrashing brought 3 men for 2 days. The mother had no help with the housework except her daughter.

On a farm of 200 acres where the baby was born early in the fall the mother had 3 harvesters to board for 2 weeks in June; at thrashing in August she had 4 men for dinner 2 days only. She had no help either time and she reported that she felt "extra well" throughout the summer. In addition to her work for the men she had two little children, 2 and 3 years old, to care for.

On a 160-acre farm the mother, whose baby was born late in the fall, boarded 6 men for 2 weeks at harvest beginning the last of June; at thrashing in August she boarded 5 men for 2 days. She always has to be careful of her strength during the early months of pregnancy, but fortunately was in excellent health during the busy season. Her daughter of 18 helps her with the housework; she has only one other child besides the baby, but she is caring for two of her sister's children.

On a 380-acre farm the baby was born in the latter part of May, the sixth child in a family whose eldest was only 8 years old. The mother was in excellent health through her pregnancy and recovered from childbirth so well—"felt better than ever before"—that she kept her hired girl only two weeks, after which she did all her regular work, including milking, gardening, and the care of chickens. Harvest came when the baby was 3 weeks old, bringing 5 "hands" for 2 weeks; at thrashing, immediately after harvest, 2 haulers were boarded for 2 days. The mother had no help with the housework during this time, but she did no milking or gardening through the harvest period; as far as possible she had "got her work done up ahead" the first week she was up from bed.

The mother on a farm of 240 acres had three children, the oldest 7, before her last baby was born. This birth occurred in the winter, which made the trying latter months of pregnancy—the mother suffers from swollen feet and varicose veins—easier than if it had come in the summer. In the previous summer she boarded 6 men at harvest for 6 weeks; and almost immediately after that she had the "whole crew" of 12 thrashers to cook for for 3 or 4 days. From the time the baby was 3 weeks old she had 1 hired man to board; 6 harvesters again in the summer, but for only 2 weeks; and 12 thrashers in August. She had help each summer, however.

Another mother, whose baby was born in the fall on a 640-acre farm, had to board 4 harvest hands in July and 12 thrashers for 6 days in August in both the preceding and following summers; she had no outside help with the housework, but her 2 grown daughters do much of the work. She was in good health throughout this time except for varicose veins during pregnancy. Another baby was born

the second spring, and the varicose veins were "worse than ever." That year the mother had the usual 4 harvesters for 2 weeks when the baby was 10 weeks old; but the thrashers brought a cook shack, so that she had only 3 or 4 grain haulers to provide for. The father keeps 1 hired man nearly all the time. This mother has 11 children, of whom 5 were less than 10 years old when the last baby was born.

The baby on one 560-acre farm was born in the winter. The mother was troubled with vomiting throughout pregnancy. One hired man was employed steadily that year. The six harvesters stayed until the end of July, but the mother had help then. For the last three months before the baby was born she had a hired girl all the time and did no work except cooking and sewing. The cooking in itself was no light task during this period, as her husband thrashed three different times that fall, the last time only a month before the baby was born; and each time the mother cooked for the whole crew of 12 to 14 men. Ever since this confinement—her first—she has been almost disabled with uterine trouble. The following summer there was 1 hired man before harvest; 6 harvesters for 2 weeks; and only 3 or 4 haulers for 3 days at thrashing, because the thrashers brought a cook shack. The mother could not get a hired girl that year, but her sister helped her through harvest and thrashing.

A mother who lived on a 640-acre farm had four little children before this baby came, of whom the oldest—twins—were only 4. The baby was born in the winter, five months after harvest time, and the mother had good health all through her pregnancy except in the first two months. At harvest that summer she had a hired girl to cook for the 7 men, but no help at thrashing in September, when she had to do the cooking for 15 men for 3 days. One man is employed all the time. The year following the baby's birth the mother cooked for 3 harvesters and later for 3 haulers at thrashing, and then for 2 hired men until November; she could not get a girl at all that year, although the 2-year-old was sick at harvest time and the mother was barely able to struggle through with the work. This family plans to give up farming, partly because the harvest work is too hard for the mother and they have found it almost impossible to get household help.

Four-fifths (272) of all the farm mothers worked for harvest crews, of at least 3 men, either before or after confinement; 43 of them within 1 month of confinement, 81 within 2 months, and 124 within 3 months. That serious harm may result from the strain of such work is illustrated by the experience of two mothers during former pregnancies, in each instance a little over a year before the last baby was born. Each had a miscarriage that summer, one at 2 months and one at 5, which she attributed to overwork at harvest time. Both of these women evidently were hard workers. One of them had a gang of carpenters in addition to the farm hands to provide for the summer of the miscarriage, and besides her own work she did the washing and baking for a bachelor neighbor.

It is markedly true of this country that prosperity comes hard on the farmer's wife, because prosperity here means practically always a larger farm and more wheat, and therefore more men to board for a longer time. One woman expressed the situation succinctly by saying: "We have so many men because we farm so much land." She had a double crew of 15 harvesters to board both the year her baby was born and the year after, and 10 thrashers immediately after harvest; also 2 men through the rest of the summer and fall, and a gang of carpenters for a good part of both summers. Though she had a hired girl during harvest and thrashing, her work was nevertheless much heavier than that of the wife on a quarter-section (160-acre) farm whose only "hands" were a single crew of harvesters for a couple of weeks and a few haulers for two or three days. It also happened that in her case the difficulties of the situation were aggravated by an uncomfortable pregnancy, with much vomiting, and a difficult instrumental delivery—the birth occurring two weeks after thrashing—resulting in injuries which troubled her for a long time afterwards.

Another mother, whose husband farms a section and a half (960 acres), had a crew of 17 men on the place for three months the summer her baby was born and 1 or 2 men all the time. A third, on another 960-acre farm, had 4 men for a week, then 12 men for six weeks (finishing one week before her baby was born), and after that from 1 to 4 men for two months more until the next crop was sown. Each of these women had a hired girl through the summer.

Mothers' work for harvest crews is not only heavier on the larger farms but also falls to the lot of a larger proportion of the mothers. Where the father farmed less than half a section 72 per cent of the mothers had this work to do either before or after confinement; on farms of from one-half to three-quarters of a section the percentage of mothers having such work was 85; and on farms of over three-quarters of a section 87. This relation holds true of all work for farm hands; where the farm was smaller than one-half section 79 per cent of the mothers had to carry this burden during pregnancy; on the medium-sized farms, one-half to three-quarters of a section, 90 per cent; and on the larger farms (over 480 acres) 95.5 per cent of the mothers had hired men to work for.

Renters' wives have many inconveniences to bear, but they fare a little better than owners' wives when it comes to working for the hired men; 84 per cent of the former boarded some hired men during pregnancy and 92.4 per cent of the latter. Farm laborers' wives, of course, usually escape this kind of work, but sometimes they have to board some of the employer's hands.

Summer work is likely to fall heavily upon the wife of the man who owns and runs a thrasher. There were 7 of them among the

mothers included in the survey. Among these 2 ran the cook shack for the husband's crew for about 2 months; 2 did the husband's farm chores for 2 or 3 months while he was away with the thrasher; 1 had the crew to feed at the house most of the time for 2 months; and another had the crew at the house over Sundays all through the thrashing season.

Dairy work.

Dairying is a minor factor in agriculture in this part of Kansas; most farmers keep a few cows and many sell some butter or cream, but very few make any large part of their income from this source. Though half of the women visited did some churning, the large majority of these made butter only for their own use. Neither milking nor running the separator is customarily regarded as women's work, and a goodly number of the men even do the churning; in most families the mother does the milking only when the men are away or particularly busy, just as she would help with their other chores at such times. As the heaviest milk production comes in the winter while there is wheat pasture for the cattle, and as the men are least busy at this time, the situation works out very conveniently for the women.

Poultry raising.

The most common outdoor work done by the women is poultry raising. Almost every farm has its flocks of chickens and turkeys. Eight out of every 10 women visited kept chickens; and most of them raised at least 200 a year, while flocks of 400 or more are not uncommon. Most of the mothers do not regard the work of caring for the chickens as onerous, for in this climate chickens seem to thrive with very little care except in the spring, and therefore do not aggravate the summer rush.

Gardening.

Less than half of the mothers reported having done gardening during the period covered by the survey. Many had no garden (it is a discouraging task to try to raise vegetables in this climate), and in other families some one else—husband, children, or grandmother—took care of the garden. The men as a rule are helpful about doing the harder part of the work, such as preparing the ground, and often the cultivating also.

Other farm work.

Other farm chores—feeding the stock, etc.—rarely fall to the lot of the mother of the family; only 13 women reported doing this kind of work. And field work is even more unusual, only 7 mothers having helped in the fields during the last pregnancy or the year

following. One woman expressed the general standard when she said: "I had rather do outside work than housework, but I won't do both." In this community few women would think of neglecting their housework in order to help in the fields.

Farm work during girlhood.

The situation is very different when one inquires as to the work which these same mothers did when they were girls. Ninety per cent of them lived in the country for at least two years of their girlhood (after they were 10 years old); and of these, four-fifths did more or less farm work. About one-third of the country girls did chores only—milking, gardening, care of chickens, feeding stock—while nearly half of them, in addition to their chores, did some work in the fields. For the girls raised in western Kansas this field work usually consisted of driving teams or herding cattle; but the list includes women who as girls did many other kinds of work in other places.

INFANT WELFARE.

Infant mortality rate.

The term "infant mortality rate" is used in the Children's Bureau studies to mean the number of children out of each 1,000 born alive within a given period who die before they are 1 year old.

In the group of 349 live-born children included in the survey, 175 were born at least a year before the agent's visit; and of these 7 had died before reaching their first birthday, giving an infant mortality rate of 40 per 1,000, or 1 death for every 25 births. For the other 174 born within the year preceding the visit no definite rate can be computed, because some of those who were still alive when they were visited may have died afterwards before they were a year old. There were 8 known deaths among this group, so that the infant mortality rate was at least 46 per 1,000. According to the death records of the county, no others of these children died up to the close of 1916, when all of them were at least 3 months old and had therefore passed the age when most infant deaths occur. Hence it seems probable that the actual rate for this group would not be a great deal higher than this figure.

An infant mortality rate of 40 per 1,000 is the lowest found in any of the Children's Bureau studies and less than half of the lowest rate found in any of the cities studied; the rate found in the same way for selected country townships in Wisconsin was 54 per 1,000. It must be remembered that the figures upon which this rate is based are so small that one or two deaths more or less—which might easily have happened without any real change in conditions—would make a considerable difference in the rate. Still it is improbable that chance variation would bring the rate much above 50.

The mothers of these babies had had altogether 1,193 live-born children. Excluding the 174 who were born within a year of the date of visit, there remain 1,019 children in these families for whom the infant mortality rate can be computed. Among these children 56 died before they were a year old, which gives an infant mortality rate of 55 per 1,000, or a little over 1 in 20. Evidently, then, the low rate for the survey period is not sporadic; the causes which produce a low rate among the babies in these country families have been in operation throughout the family history.

It is encouraging that in a prosperous, intelligent, farming community the infant mortality rate can be brought so low as this. Nevertheless, the existing rate should not be regarded with complacency, for, as Sir Arthur Newsholme says, "If babies were well born and well cared for, their mortality would be negligible." In other words, there is no inherent reason why *any* babies should die in a community which has all the advantages possessed by this county—country life, healthful climate, high standards of living, a high level of intelligence about matters of health, and means wherewith to provide for its mothers and babies.

Causes of death.

Of the 15 deaths under 1 year of age which occurred in the group of babies for whom schedules were secured, 2 occurred under 1 day, 4 under 2 weeks, and 6 under 1 month. Five of the deaths were due to causes peculiar to early infancy, 5 to diarrhea and enteritis, 3 to respiratory diseases (1 of these was bronchitis following whooping cough), 1 to measles, and 1 to marasmus.

Feeding customs.

Practically all the babies in this study were breast fed at least for a few days. Of the 349 live-born babies 2 died before they were fed at all; only 2 were fed from the bottle from the beginning; and only 7 were weaned before the middle of the first month. On the other hand, 311 or 92 per cent of the 340 babies for whom the record covers the first month of life were exclusively breast fed through the greater part of that month, and another 20 or 6 per cent were partly breast fed. The proportion of exclusively breast-fed babies then drops month by month to 71 per cent at 5 months and to 61 per cent at 6 months. After that the percentage naturally falls off more rapidly, but 23 per cent or nearly one-fourth of the babies were still exclusively breast fed during the ninth month, and a small number (8 per cent) had no other food than breast milk until after they were a year old.

Breast feeding in combination with other food is continued longer even than these figures would indicate. At the end of the ninth month only 19 per cent of the babies were weaned, i. e., wholly taken

off the breast, and at the end of 12 months only 30 per cent or less than one-third. In fact, for the majority breast feeding continues well into the second year; at the end of 15 months 45 per cent or nearly one-half were not yet weaned; and at the end of 18 months 24 per cent or about one-fourth. Medical authorities agree that this custom of late weaning is not to be recommended. Though less dangerous than the opposite practice of too early weaning, nevertheless it is not advantageous either for the mother or for the baby. In most cases the baby should be weaned by the end of the first year.

If the feeding history of these country babies in Kansas is compared with that of the city babies of native mothers in Johnstown, Pa., and Manchester, N. H.—the first two cities where this study was made by the Children's Bureau—and in Akron, Ohio, the larger of the cities of the Middle West, we find that exclusive breast feeding is much more common through the first nine months in this Kansas county than in any of these cities (with the exception of the last three months in Akron), and, conversely, that artificial feeding is even more markedly absent. Since breast feeding, especially in the early months, is proved and acknowledged to be an important factor in protecting a baby's chance of life, this fact of the unusual prevalence of breast feeding probably accounts, in part at least, for the low death rate among this group of country babies.

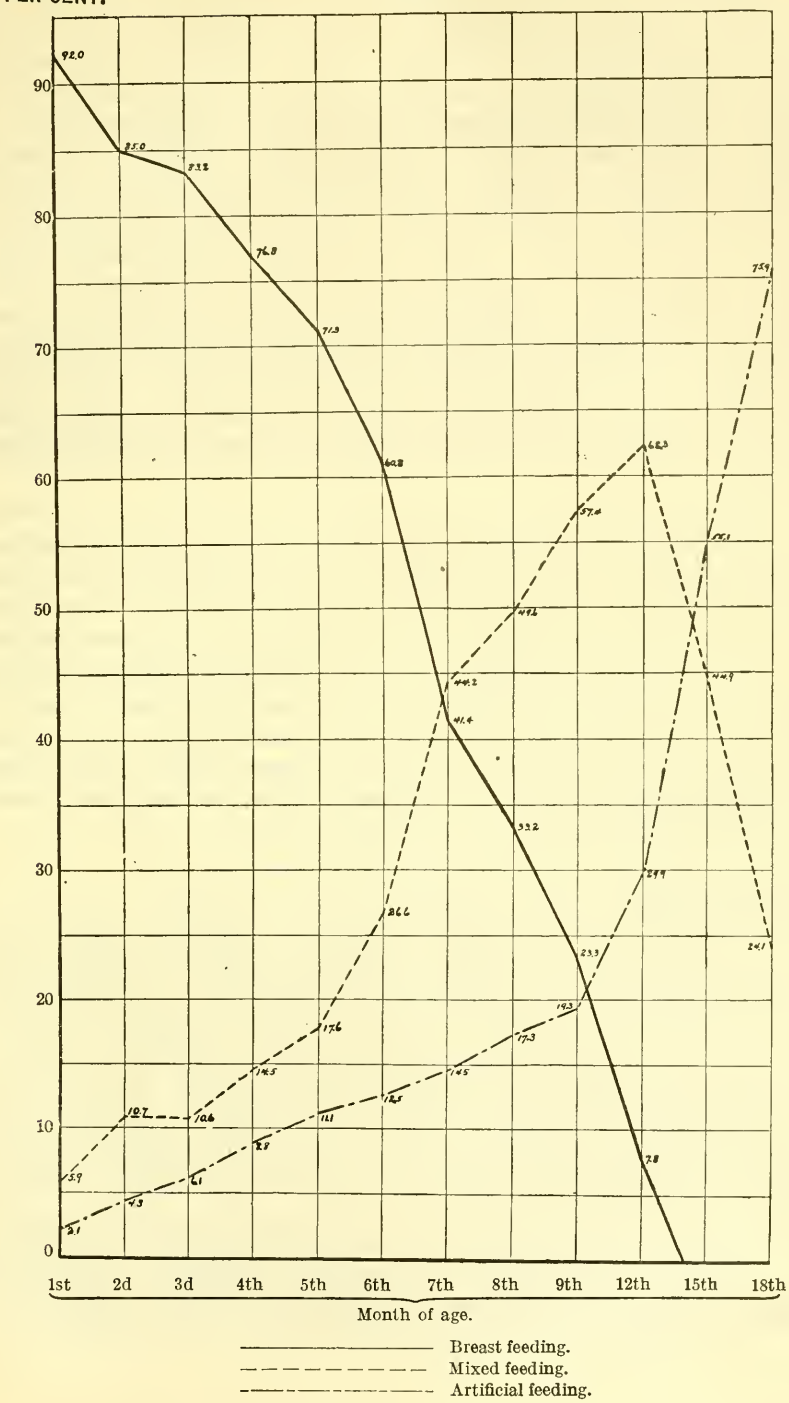
TABLE V.—*Breast and artificial feeding, by month and locality.*

Locality.	Percentage of infants who were exclusively breast fed.				Percentage of infants who were artificially fed.			
	During first month.	During third month.	During sixth month.	During ninth month.	During first month.	During third month.	During sixth month.	During ninth month.
County in Kansas	92.0	83.2	60.8	23.3	2.1	6.1	12.5	19.3
Johnstown, Pa.[1]	.....	66.9	41.1	11.8	.....	20.3	26.1	34.1
Manchester, N. H.[1]	81.7	60.9	36.3	17.1	15.4	32.5	47.4	55.1
Akron, Ohio[1]	87.9	73.3	54.5	27.7	8.1	18.5	26.9	32.3

[1] The percentages for Johnstown, Manchester, and Akron are given only for the babies of native-born mothers, because in the Kansas county practically all the mothers were native.

A mother may be obliged for some reason to resort to supplementary feeding or even to wean her baby altogether; but necessity does not excuse the giving of solid food in the early months, as is often done by ill-advised mothers. The mothers of this community are on the whole careful in such matters. Only 10 babies (out of 310 whose feeding records for three months were obtained) were given any solid food before they were 3 months old, including as solid food gravy, or milk thickened with flour, crackers, etc. Only 59 (out of 263) began to eat solid food before they were 6 months old. And 79 children (out of 202) had no solid food until after they were 9 months old.

PERCENTAGES OF ALL BABIES RECEIVING DIFFERENT KINDS OF FEEDING, BY MONTH OF AGE.



The use of proprietary foods and condensed milk for babies is less common than in many localities. Twenty-four of the babies of the survey were given condensed milk; 14, malted milk; and 26, other prepared foods. Cows' milk, either whole or modified but without any proprietary preparation, was used as a regular feeding for 51 babies at some time before they began to take solid food. A large number, however, had no supplementary feeding—the breast milk being ample—until the mother considered that it was time to allow the baby to eat solid food, which, as we have seen, in most cases was not very early. Some of the mothers in this county unfortunately exercise worse judgment about what to give the baby than about when to begin artificial feeding. Too many youngsters take "tastes" of whatever the family has, or whatever they want, from the beginning. On the other hand, many mothers are careful about this also, beginning with a restricted diet of milk and cereals, bread, or crackers, and only gradually extending the list of what the baby may eat.

A striking illustration of the dangers of artificial feeding, and also of the close connection between maternal and infant welfare, is given by the history of the baby whose mother died of puerperal septicemia. He "did finely" the first 10 days while his mother was nursing him but never thrived on artificial food. All sorts of feeding—except modified milk—were tried by the two women who took care of him almost constantly under the advice of one or another doctor; but nothing agreed. He "just wasted away"; and when the agent saw him he was "a pitiful little skeleton, with hardly strength enough to cry." Consequently it was no surprise to learn that he died the following day from marasmus.

Birth registration.

Kansas has a satisfactory vital-statistics law which requires (sec. 10, ch. 296, Session Laws 1911): "That it shall be the duty of the attending physician or midwife to file a certificate of birth, properly and completely filled out, giving all the particulars required by this act, * * * with the local registrar of the district in which the birth occurs, within 10 days after the date of birth, and if there be no attending physician or midwife, then it shall be the duty of the father or mother of the child, * * * to notify the local registrar within 10 days after the birth of the fact that such birth occurred * * *."

As has been explained, a canvass was made in the country districts to find babies whose births had not been registered. The list of names so found was afterwards checked by the State registrar.

In this way 35[1] unregistered births were discovered. Fourteen of the 350 children born in the county were born in town and all of these 14 were registered; but of the 336 births which occurred out in the country, these 35 or 10.4 per cent were unregistered. If this county may be taken as a fair sample of the completeness of birth registration in Kansas, only a slight improvement would be necessary to bring the State up to the standard required for admission to the birth-registration area, viz, that at least 90 per cent of all births shall be registered.

Twenty-six of the unregistered births were attended by physicians, 5 by midwives, and 4 by other people. As midwifery in this county is on such a nonprofessional basis, it is fair to say that the duty of reporting all these 9 births where there was no physician devolved upon the parents. Six of the 10 physicians who did the bulk of the obstetrical work in this district reported all their births; and 3 of the others were responsible for half of all the failures to register.

No record was secured as to promptness of registration except for the 19 births which occurred in September, 1916. All of these were registered; but 8 of the 19 were registered more than 10 days after the birth took place, and therefore the requirement of the law on this point was not fulfilled.

Township, village, or city clerks act as local registrars in Kansas and are required not only to secure complete registration from their districts but also to keep local records of all births and deaths. According to the provision of the law (sec. 3, cit.), which authorizes the State board of health to establish registration districts, this county is divided into eight districts of varying size. Five consist of only one township, while the largest contains five townships. Apparently the purpose is so to arrange the districts, by grouping the townships around the larger towns, that the registration office shall be as convenient as feasible to the local physicians. But this arrangement must interfere, where the districts are large, with the registrar's ability to keep track of events through his own acquaintance. The problem of registration is further complicated by the fact that in some cases births are not registered in the districts where they occurred but in the physicians' home towns. This practice is unnecessarily confusing to the registrar of the district in which the birth did occur, if he is making an effort to carry out his duties and see that the births in his territory are registered.

[1] Including one which was registered several months after the canvass was made, possibly, therefore, as a result of the canvass; but excluding one which had been registered in the local office but the certificate not forwarded to the State registrar.

SUMMARY AND CONCLUSIONS.

The findings of this survey of the rural area of one county have a meaning not only for the county itself but also, because this county is a typical one, for large tracts of western farming country. The circumstances affecting the care of mothers in childbirth here have therefore a wide significance. The fact that every year in the United States thousands of mothers die needlessly from childbirth compels attention to this subject. The favorable conditions described in this report suggest measures to be taken by other communities interested in the prevention of suffering and death of mothers and babies. The less favorable conditions reported will doubtless be recognized as typical of large numbers of rural districts throughout the country.

The farming population of this county is almost entirely of native birth and predominantly of native parentage. The general standard of living and of education and intelligence is high, especially among the two-thirds of the population who own land. For several years the all-important wheat crop has been satisfactory and prices high, so that the community is in a prosperous financial condition. Consequently most families are not debarred by poverty from obtaining such care for mother and baby as seems to them necessary.

The infant mortality rate of the group of babies studied in this district is low—40 per 1,000 births. Though this is only half of the lowest rate found by the Children's Bureau in any of the cities it has studied, nevertheless the community should not rest satisfied with this record but should set as its aim the saving of all its babies. Nearly all the babies seen were strikingly sturdy, active, and apparently well developed. It is significant that these indications of good health occur in a community where only 1 baby in 5 is weaned before he is 9 months old, and where the mothers as a rule are careful of the feeding of their babies and are interested in learning all they can about the best methods of infant care.

The interest shown by the mothers of the county in having their babies examined at the "Baby Days" indicates a field for further endeavor. Such examinations might well be held by physicians at regular intervals at accessible centers throughout the county. A county public-health nurse could assist the physicians at the "Baby Days" or baby-health conferences. She could also establish headquarters at the county seat and at accessible substations throughout the county in smaller towns and rural schools, where she could weigh babies and talk with mothers who wish her advice. How to keep the baby

well through the hot summer; what to do before the doctor comes, in an emergency such as croup or convulsions; how to nurse a sick child or a mother and newborn baby at home—these are all questions about which women are anxious to learn all they can. The simple equipment necessary for these meetings and baby-health conferences throughout the county—scales for weighing the babies, exhibit material, and apparatus for giving demonstrations—could easily be moved from one center to another if an automobile were available for the nurse's transportation.

The study shows that approximately 1 in 10 of the babies in this county born in the open country will be unable to get a birth certificate if one is needed later in life. Such a percentage is a fairly low one, but it shows that a still greater appreciation of the importance of birth registration on the part of parents and physicians is necessary. No community should be content until every birth is registered.

Except at harvest the ordinary run of work which the mothers have to do is not overhard. Although such conveniences as running water, sinks, and indoor toilets—which a city woman considers indispensable—are too often lacking, nevertheless mechanical labor-saving devices are fairly common. Few mothers do any field work or any farm chores except poultry raising and gardening. But at wheat-harvest time, and often at thrashing, there comes an almost overwhelming rush of work because of the necessity of boarding the crews. This is always a great burden and may be a serious matter if it happens at a time when the mother's strength should be spared.

Trained nursing care at confinement is seldom obtained. Only a few of the mothers went to a hospital at this time or had a trained nurse together with a helper for the housework at home. Even the so-called "experienced" nurses are rare; most of the mothers visited depended upon relatives, neighbors, or hired girls for their nursing care.

There is an evident need in this community for trained attendants—competent women who have had some training and experience in home care of the sick, and who can do the necessary housework for the mothers and the nursing under the supervision of a trained nurse. In several communities it has already been proved that women can be found willing and anxious to do this work. Training courses have been established, and registries of properly qualified and supervised trained attendants are conducted in several cities and towns. The supervision of the work of these attendants by registered nurses is an essential part of the plan. Visiting nurses are acting in this capacity in several communities. A nurse, or a group of nurses, employed by this county could well include this work of supervision in their program.

The situation as to medical care in connection with childbirth is better than in other country districts studied by the Children's Bureau. Almost all the mothers were attended by a physician at confinement. Roads which are nearly always good made medical care accessible even in this country of widely scattered farms. The necessary cost of medical service is not prohibitive to the majority of families. Hospitals, accessible to all parts of the county by means of the good roads, are available for complicated cases. The mother in the group of families studied who had to be delivered by Cæsarean section might have been lost, and her baby also might have died, if she had lived in a rural district where, either because of distance or because of impassable roads, no good hospital was within reach.

The question of the prenatal care obtained by this group of mothers is important. Only of late and to a limited degree has it been realized that expert supervision is necessary for every woman during pregnancy, if complications of this period and of confinement are to be prevented or cured. Such supervision is essential for the reduction of the maternal mortality rate of any community. That physicians should realize these facts is not enough; women and their husbands must realize them also. Otherwise women will not consult their physicians early and regularly during pregnancy, nor will their husbands be willing to pay for this added service. In this rural county one-third of the mothers secured some prenatal care from physicians. In few cases was this care adequate or even fairly adequate; nevertheless, a beginning has evidently been made toward the realization that medical supervision during pregnancy is necessary. During the last few years it has been proved that trained nursing service is invaluable in supplementing medical supervision during pregnancy. If this is true in the city, where it is comparatively easy to consult a physician, it is still more true in the country where the distance from the physician makes it more difficult to see him regularly. A nurse who has had special training and experience in prenatal work, and who is especially equipped to discern the danger signs of pregnancy, can be of great help to the prospective mother in the country and to her physician. She will advise the mother about daily details of her care of herself so that she can avoid much discomfort and disability; she will urge her to see her physician early for a thorough preliminary examination and later when necessary; she will urge her to send samples of urine regularly to be examined, or, if asked to do so, she will make examinations of the urine and report the results to the physician. Such prenatal work may be one of the most important phases of the duty of a county public-health nurse.

The fact that in more than one-third of the confinements the mother did not receive a visit from the physician after the day of the birth, and the fact that in another third she received only one visit, are evidence that the importance of after-care for the mother is also not realized.

The Children's Bureau in a recent publication[1] has suggested a plan for securing adequate medical and nursing care for mothers and babies in a rural county, which should include:

1. A rural nursing service, centering at the county seat, with nurses especially equipped to discern the danger signs of pregnancy. The establishment of such a service would undoubtedly be the most economical first step in creating the network of agencies which will assure proper care for both normal and abnormal cases. * * *

2. An accessible county center for maternal and infant welfare at which mothers may obtain simple information as to the proper care of themselves during pregnancy as well as of their babies.

3. A county maternity hospital, or beds in a general hospital, for the proper care of abnormal cases and for the care of normal cases when it is convenient for the women to leave their homes for confinement. Such a hospital necessarily would be accessible to all parts of the county.

4. Skilled attendance at confinement obtainable by each woman in the county.

In the county studied progress has evidently been made in securing certain of these suggested essentials for the care of mothers and babies. It will be evident that in this county and others of similar type the next step may well be the establishment of a nursing service for the rural parts of the county. The ways in which a nurse could be of help to the mothers of this district have been pointed out.

A number of public-health nurses in the United States are now employed by county boards of supervisors or boards of education. Their work is no longer an experiment; its value has been definitely proved. In certain counties the work was established at first through private subscriptions; enough money was raised in this way to support a nurse for a period of 6 to 12 months; after the value of the work had been demonstrated the county authorities appropriated money to continue it. This was in recognition of the fact that public-health nursing is not a charity but is a measure for health protection to which all the people of the community have a right. In one county in a Middle Western State a federation of women was formed which included all the organizations of women in the county—women's clubs, ladies' aid societies, and parent-teacher associations, as well as small neighborhood groups of rural women. Largely through the efforts of this federation a tax was levied by referendum vote and a

[1] Maternal Mortality from All Conditions Connected with Childbirth in the United States and Certain Other Countries, p. 27. U. S. Children's Bureau publication No. 19. 1917.

large sum of money provided for health work. Two nurses are now employed by this county.

In many counties the nursing service has been established through the employment of a nurse for the rural schools, and this method has proved very successful. In other counties the nurse has begun her work as a tuberculosis nurse; in others as an assistant to the county health officer. Whatever the beginning of the work, the nurse soon finds that the assistance which she can give to mothers in the care of themselves and of their babies is one of its most important developments.

In planning a rural nursing service two things are essential:

1. Every effort should be made to get the right nurse. The nurse employed should have had training in public-health or visiting nursing such as is given now in many training courses, and should also have practical experience. Nurses who have had hospital training only are not fitted to carry out public-health nursing successfully.

2. Ample provision must be made for transportation through the county.

In Kansas, county boards of commissioners have the authority to employ county nurses if they see fit. There is therefore no legal obstacle in the way of this measure for the promotion of the public welfare, and this county could in no way better demonstrate its progressiveness nor more effectively protect the health of its citizens than by providing such nursing service for the whole county.

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Rural Child-Welfare Series:

No. 1. Maternity and Infant Care in a Rural County in Kansas, by Elizabeth Moore, 50 pp., 4 pp. illus., and 1 chart. 1917. Bureau publication No. 26.

Miscellaneous Series:

No. 1. The Children's Bureau: A circular containing the text of the law establishing the bureau and a brief outline of the plans for immediate work. 5 pp. 1912. Bureau publication No. 1. (Out of print.)

No. 2. Birth Registration: An aid in protecting the lives and rights of children. 20 pp. 3d ed. 1914. Bureau publication No. 2.

No. 3. Handbook of Federal Statistics of Children: Number of children in the United States, with their sex, age, race, nativity, parentage, and geographic distribution. 106 pp. 2d ed. 1914. Bureau publication No. 5.

No. 4. Child-Welfare Exhibits: Types and preparation, by Anna Louise Strong. 58 pp. and 15 pp. illus. 1915. Bureau publication No. 14.

No. 5. Baby-Week Campaigns (revised edition). 152 pp. and 15 pp. illus. 1917. Bureau publication No. 15.

No. 6. Maternal Mortality from all Conditions Connected with Childbirth in the United States and Certain Other Countries, by Grace L. Meigs, M. D. 66 pp. 1917. Bureau publication No. 19.

No. 7. Summary of Child-Welfare Laws Passed in 1916. 74 pp. 1917. Bureau publication No. 21.

No. 8. Facilities for Children's Play in the District of Columbia. 72 pp., 25 pp. illus., and 1 map. 1917. Bureau publication No. 22.

No. 9. How to Conduct a Children's Health Conference, by Frances Sage Bradley, M. D., and Florence Brown Sherbon, M. D. 24 pp. 1917. Bureau publication No. 23.

No. 10. Care of Dependents of Enlisted Men in Canada, by S. Herbert Wolfe. 56 pp. 1917. Bureau publication No. 25.

No. 11. Governmental Provisions in the United States and Foreign Countries for Members of the Military Forces and their Dependents, prepared under the direction of Capt. S. Herbert Wolfe, Q. M., U. S. R., detailed by the Secretary of War. 237 pp. and 4 diagrams. 1917. Bureau publication No. 28.

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